This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Major, Industrial permit. The discharge results from the operation of a water treatment plant, vehicle maintenance and washing activities, non-contact cooling water, steam condensate, and stormwater associated with industrial activities. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language, as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

1.	Facility Name and Mailing Address:	Quantico Marine Corps Base NREA, 3049 Bordelon St, Quantico, VA 22134	SIC Code :	9711
	Facility Location:	Approximately 60,000 acres located in the Counties of Stafford, Prince William, and Fauquier		
	Facility Contact Name:	Steve Clark	Telephone Number:	(703) 432-0528
2.	Permit No.:	VA0002151	Expiration Date of previous permit:	5/22/2011
	Other VPDES Permits associated with this facility:		See Attachment 1	
	Other Permits associated with this facility:		See Attachment 1	
	E2/E3/E4 Status:	E3		
3.	Owner Name:	U.S. Marine Corps – Quantico Marine Corps Base		
	Owner Contact/Title:	Colonel D.J. Choike	Telephone Number:	(703) 432-0528
4.	Application Complete Date:	December 21, 2010		
	Permit Drafted By:	Alison Thompson	Date Drafted:	March 16, 2011
	Draft Permit Reviewed By:	Joan Crowther	Date Reviewed:	March 29, 2011
	WPM Review By:	Bryant Thomas	Date Reviewed:	April 11, 2011
	Public Comment Period :	Start Date: 6/23/11	End Date:	7/22/11

5. Receiving Waters Information: See Attachment 2 for the Flow Frequency Determinations

Receiving Stream Name :	Beaverdam Run, UT; Chopawamsic Creek; Chopawamsic Creek, UT; Potomac River (VA); Potomac River (MD); Smith Lake, UT		
Drainage Area at Outfall:	See Attachment 2	River Mile:	Numerous
Stream Basin:	Potomac River	Subbasin:	Potomac River
Section:	4b, 5, 5a	Stream Class:	II and III
Special Standards:	b, PWS, y	Waterbody ID:	VAN-A26R, VAN-A26E, VAN-A27R
7Q10 Low Flow:	See Attachment 2	7Q10 High Flow:	See Attachment 2
1Q10 Low Flow:	See Attachment 2	1Q10 High Flow:	See Attachment 2
Harmonic Mean Flow:	See Attachment 2	30Q5 Flow:	See Attachment 2
303(d) Listed:	See Attachment 3	30Q10 Flow:	See Attachment 2
TMDL Approved:	See Attachment 3	Date TMDL Approved:	See Attachment 3

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

✓	State Water Control Law	✓	EPA Guidelines
✓	Clean Water Act	✓	Water Quality Standards
✓	VPDES Permit Regulation		Other (Potomac Embayment Standards)
✓	EPA NPDES Regulation		

7. Licensed Operator Requirements: Not Applicable

8. Reliability Class: Not Applicable

9. Permit Characterization:

	Private	✓	Effluent Limited	✓	Possible Interstate Effect
✓	Federal	✓	Water Quality Limited		Compliance Schedule Required
	State	✓	Toxics Monitoring Program Required		Interim Limits in Permit
	POTW		Pretreatment Program Required		Interim Limits in Other Document
✓	TMDL				

10. Wastewater Sources and Treatment Description:

The Quantico Marine Corps Base serves as a training center for major elements of the U.S. Marine Corps, officers and senior enlisted personnel and also provides helicopter support for the U.S. Government Executive Branch. Process wastewaters are generated from various operations necessary to provide administrative and logistical support for the installation. The other discharges defined in this permit occur due to storm water runoff associated with the various industrial activities.

NPDES Permit Rating Work Sheet: The VPDES permit (VA0002151) associated with industrial activity at the Quantico Marine Corps Base has been previously listed as a Major Industrial Permit. The basis for the "Major" facility designation was due to the number of outfalls, the numerous industrial activities that routinely occur at the base and volumes from the various discharges. It is staff's Best Professional Judgment that the designation as a "Major" facility should remain effective with this reissuance for the same reasons cited above. Also, due to the number of outfalls associated with industrial activity, it is not practical to select any one for use in the completion of the EPA Industrial Ratings Worksheet. Therefore, it will not be included as part of this reissuance package.

With this reissuance, the facility has asked to include the stormwater outfall located at the Mainside STP (VA0028363) in this individual permit. It is noted as Outfall 002 in the application. Historical records show that there was an Outfall 002 located on Beaverdam Creek. In order to distinguish the two outfalls, staff has designated this outfall as Outfall 007 in the fact sheet and permit for the 2011 reissuance.

See Attachment 4 for topographic maps with the outfall locations identified.

TABLE 1 – Outfall Description

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	OUTFALL LOCATION Latitude/Longitude
003	**Mainside WTP** Filter backwash, Stormwater	Sedimentation (1 lagoon)	38° 31'09" N 77° 22' 08" W
007	**Stormwater from the Mainside STP site**	None	38° 30'54" N 77° 17' 55" W
009	**NCO Swimming Pool** Swimming pool filter backwash (May - Sept), Stormwater	Dechlorination	38° 30' 21" N 77° 18' 30" W
010	**Mainside Drainage - North** NCCW (May – Sept), Stormwater	None	38° 30' 21" N 77° 17' 46" W
~~013~~	**MWR Hobby Shop** ~~Storm water associated with industrial activity~~	~~None~~	Removed from this permit. Industrial activities removed from the site.
014	**HMX-1 Hangars & Maintenance -** Steam condensate & storm-water runoff	None	38° 30' 36" N 77° 18' 11" W
016	**Southern Mainside Drainage -** NCCW, Stormwater runoff	2-O/W Separators	38° 30' 47" N 77° 18' 11" W
018	**HMX-1 Supply Depot** Storm water associated with industrial activity	None	38° 29' 39" N 77° 18' 39" W
~~019~~	**Aero Club** ~~Storm water associated with Industrial activity~~	~~None~~	Removed from this permit. Industrial activities removed from the site.
~~022~~	**MWR Auto Hobby Lot** ~~Storm water associated with industrial activity~~	~~None~~	Removed from this permit. Industrial activities removed from the site.
030	**BoBo Hall** Stormwater, Refrigerator Condensate	None	38° 29' 46" N 77° 18' 33" W
035	**BOQ** Stormwater	None	38° 30' 43" N 77° 18' 11" W
072 / 0721	**Fuel Farm** Storm water from the tank diked area and hydrostatic tank test waters.	Oil/water separator	38° 31' 26" N 77° 24' 40" W
073	**Landfill** Storm water associated with industrial activity	Sedimentation	38° 31' 21" N 77° 25' 31" W
074	**Landfill** Storm water associated with industrial activity	Sedimentation	38° 31' 23" N 77° 25' 19" W

OUTFALL NUMBER	DISCHARGE SOURCE	TREATMENT	OUTFALL LOCATION Latitude/Longitude
075	**Construction Equipment Repair** Storm water associated with industrial activity	None	38° 31' 45" N 77° 25' 38" W
086	**Russell Road Landfill** Storm water discharge from collection basin #1	Sedimentation	38° 31' 31" N 77° 22' 23" W
090	**Russell Road Landfill** Storm water discharge from collection basin #6	Sedimentation	38° 31' 30" N 77° 22' 06" W
091	**Jet Engine Test Pads** Storm water associated with industrial activity	Visual Observation prior to discharge	38° 30' 13" N 77° 18' 03" W

Historical Note: During the 2006 reissuance, Outfall 015 was removed because the pond was filled and the outfall destroyed, Outfall 040 was removed because the swimming pool was decommissioned, Outfall 085 was removed because the non-contact cooling water now flows to the sanitary sewer, and Outfall 086 replaced Outfalls 087, 088, and 089.

11. Sludge Treatment and Disposal Methods:

The residual solids produced at the Mainside (WTP) Water Treatment Plant (Outfall 003) are sent to the Mainside STP (VPDES Permit No. VA0028363), via a discharge to the sanitary system for treatment and ultimate disposal. Operations at both the Camp Upshur WTP and Camp Barrett WTP have been eliminated and solids are no longer produced at these facilities. There is no sewage sludge production associated with any of the other discharges defined in this permit.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2	
VA0002071	Dominion Power – Possum Point
VA0028363	Quantico Mainside STP
1aBED000.19	DEQ Ambient Monitoring Station on Beaverdam Run
1aCHO003.65	DEQ Ambient Monitoring Station on Chopawamsic Creek at Route 1
1aCHO001.57	DEQ Ambient Monitoring Station on Chopawamsic Creek
1aCHO000.90	DEQ Ambient Monitoring Station on Chopawamsic Creek
1aCHO000.47	DEQ Ambient Monitoring Station on Chopawamsic Creek
1aAUA012.15	DEQ Ambient Lake Monitoring Station
1aAUA012.55	DEQ Ambient Lake Monitoring Station
1POT080.29	DEQ Ambient Monitoring Station at Quantico Bight

13. Material Storage:

The Quantico Marine Corps Base maintains a comprehensive hazardous materials inventory that is updated annually and maintained at NREA. The information presented in Attachment 5 was obtained from the hazardous material inventory, the VPDES Permit application, and from follow-up conversations with staff. This represents materials that could potentially impact the discharge from related outfalls.

14. Site Inspection:

A full Technical and Laboratory inspection was completed by DEQ-Compliance staff on January 9, 2009. See Attachment 6.

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

There are numerous segments with ambient data and impairments as presented in the 2010 303(d)/305(b) Integrated Report. See Attachment 3 for the full planning statement.

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving streams are presented in Table 3 below. All outfalls are located within the Potomac River Basin and are in Sections 4b, 5, and 5a.

TABLE 3 – Special Standards applicable to the Receiving Streams

Receiving Stream	Section	Stream Class	Special Standards	Outfall Numbers
Beaverdam Run, UT	4b	III	PWS, b, y	073
Chopawamsic Creek	5a	III	b, y	003, 086
Chopawamsic Creek	5	II	b, y	009
Chopawamsic Creek, UT	5a	III	b, y	090
Smith Lake, UT	4b	III	PWS, b, y	072, 721, 074, 075
Potomac River (VA)	5	II	b, y	007, 010, 014, 016, 035, 091
Potomac River (MD)	Maryland Waters			018, 030

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Class II tidal waters in the Chesapeake Bay and its tidal tributaries must meet dissolved oxygen concentrations as specified in 9VAC25-260-185 and maintain a pH of 6.0-9.0 standard units as specified in 9VAC25-260-50. In the Northern Virginia area, Class II waters must meet the Migratory Fish Spawning and Nursery Designated Use from February 1 through May 31. For the remainder of the year, these tidal waters must meet the Open Water use. The applicable dissolved oxygen concentrations are presented below.

TABLE 4 - Dissolved Oxygen Criteria (9 VAC 25-260-185)

Designated Use	Criteria Concentration/Duration	Temporal Application
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water[1,2]	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity) 30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	Year-round
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean >3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

[1]See subsection aa of 9 VAC 25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

[2]In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

Attachment 7 details other water quality criteria applicable to the receiving streams. The agency has developed a spreadsheet to help with derivation of effluent limits by establishing water quality criteria and applicable waste load allocations. This spreadsheet, MSTRANTI, has three printouts in Attachment 7 for the three methods of determining the appropriate WLAs. The 10:1 dilution scenario is used for outfalls 007, 010, 014, 016, 035, 091, 018, 019, and 030 based on the mixing study done for the Quantico Bight. The 2:1 dilution scenario is used for outfalls 003 and 086; this is a default dilution scenario for tidal situations. The all critical flows equal to zero scenario is used for outfalls 009, 072, 721, 073, 074, 075, and 090 – no dilution is available and the WLA is equal to the WQC.

Ammonia:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. Since the outfalls flow to either tidal waters (tidal swamp or tidal Potomac), swamp waters, or intermittent streams, default values for temperature (25°C) and pH (8.0 S.U.) were used to calculate the ammonia water quality standards. The ammonia water quality standards calculations are shown in Attachment 7.

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). Some outfalls have historical total hardness data that was used to evaluate the need for metals limits. If there is data, a discussion of the hardness data is included in Section 19 under the limit evaluations for the specific outfall. When hardness data is not available, staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 7 are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards (9VAC25-260-170 A.) states that the following criteria shall apply to protect primary recreational uses in surface waters:

1) *E. coli* and enterococci bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 ml)	126
Saltwater[and Transition Zone[2]] enterococci	35

[1]For a minimum of four weekly samples [taken during any calendar month].
[2]See 9VAC25-260-140 C for fresh[water] and transition zone delineation

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream special standard designations are found in Table 3 of the fact sheet. All outfalls are located within the Potomac River Basin.

Special Standard "b" (Potomac Embayment Standards) established effluent standards for all sewage plants discharging into Potomac River embayments and for expansions of existing plants discharging into non-tidal tributaries of these embayments. 9VAC25-415, Policy for the Potomac Embayments controls point source discharges of conventional pollutants into the Virginia embayment waters of the Potomac River, and their tributaries, from the fall line at Chain Bridge in Arlington County to the Route 301 Bridge in King George County. The Potomac Embayment Standards are not applied to the discharges in this permit since the discharges do not contain the pollutants of concern in appreciable amounts.

Special Standard PWS designates a public water supply intake. The Board's Water Quality Standards establish numerical standards for specific parameters calculated to protect human health from toxic effects through drinking water and fish consumption. See 9VAC25-260-140 B for applicable criteria.

Special Standard "y" is the chronic ammonia criterion for tidal freshwater Potomac River and tributaries that enter the tidal freshwater Potomac River from Cockpit Point (below Occoquan Bay) to the fall line at Chain Bridge. During November 1 through February 14 of each year the thirty-day average concentration of total ammonia nitrogen (in mg N/L) shall not exceed, more than once every three years on the average the following chronic ammonia criterion:

$$\left(\frac{0.0577}{1 + 10^{7.688\text{-pH}}} + \frac{2.487}{1 + 10^{\text{pH-}7.688}} \right) \text{ x } 1.45(10^{0.028(25\text{-MAX})})$$

MAX = temperature in °C or 7, whichever is greater.

The default design flow for calculating steady state waste load allocations for this chronic ammonia criterion is the 30Q10, unless statistically valid methods are employed which demonstrate compliance with the duration and return frequency of this water quality criterion.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on February 1, 2011 for records to determine if there are threatened or endangered species in the vicinity of the discharge. Three outfalls were selected as representative for each of the areas of the base.

Outfall 003 was used for Outfalls 003, 086 and 090. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Small Whorled Pogonia and the Bald Eagle. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge. The streams that the facility discharge to are within a reach identified as having an Anadromous Fish Use. It is staff's best professional judgment that the proposed limits are protective of this use.

Outfall 009 was used for Outfalls 005, 009, 007, 010, 014, 016, 018, 030, 035, and 091. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Bald Eagle. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge. The streams that the facility discharge to are within a reach identified as having an Anadromous Fish Use. It is staff's best professional judgment that the proposed limits are protective of this use.

Outfall 074 was used for Outfalls 072, 721, 073, 074, and 075. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Dwarf Wedgemussel and the Small Whorled Pogonia. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

All of the receiving streams have been classified as Tier 1. Many of the discharges go to streams with critical stream flows of 0.0 MGD and at times the streams are comprised entirely of effluent. It is staff's opinion that streams comprised entirely of effluent are Tier 1. The Virginia tidal waters of the Potomac River are listed as impaired due to PCBs in fish tissue. It is staff's opinion that these waters are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

For the outfalls with receiving streams where 7Q10 = 0
Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily

effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

For the outfalls with receiving streams where 7Q10>0
Next, the appropriate Water Quality Standards are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are the calculated on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from the permit application and the data submitted on the DMRs has been reviewed and determined to be suitable for evaluation. Effluent data were reviewed, and there have been no exceedances of the established limitations.

The current VPDES Permit required the MCB- Quantico to monitor the various outfalls for flow, pH, total suspended solids (TSS), biochemical oxygen demand (BOD5), temperature, total residual chlorine, total organic carbon (TOC), total petroleum hydrocarbons (TPH), BTEX, naphthalene and oil & grease.

Existing limitations were primarily based on a Best Professional Judgment determination for the technology-based limits of discharges of non-contact cooling water, car washes, bulk oil storage facilities and water treatment plants.

b) Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- f = Decimal fraction of critical flow from mixing evaluation
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- C_s = Mean background concentration of parameter in the receiving stream.

Some of the outfalls discharge to intermittent streams. When the water segment receiving the discharge has a 7Q10 and 1Q10 of 0.0 MGD, there is no mixing zone and the WLA is equal to the C_o.

When the receiving waters are a perennial stream the Water Quality Standards contain two distinct mixing zone requirements. The first requirement is general in nature and requires the "use of mixing zone concepts in evaluating permit limits for acute and chronic standards in 9VAC25-260-140.B". The second requirement is specific and establishes special restrictions for regulatory mixing zones "established by the Board".

The Department of Environmental Quality uses a simplified mixing model to estimate the amount of mixing of a discharge with the receiving stream within specified acute and chronic exposure periods. The simplified model contains the following assumptions and approximations:
– The effluent enters the stream from the bank, either via a pipe, channel or ditch.

- The effluent velocity isn't significantly greater (no more than 1 - 2 ft/sec greater) than the stream velocity.
- The receiving stream is much wider than its depth (width at least ten times the depth).
- Diffusive mixing in the longitudinal direction (lengthwise) is insignificant compared with advective transport (flow).
- Complete vertical mixing occurs instantaneously at the discharge point. This is assumed since the stream depth is much smaller than the stream width.
- Lateral mixing (across the width) is a linear function of distance downstream.
- The effluent is neutrally buoyant (e.g. the effluent discharge temperature and salinity are not significantly different from the stream's ambient temperature and salinity).
- Complete mix is determined as the point downstream where the variation in concentration is 20% or less across the width and depth of the stream.
- The velocity of passing and drifting organisms is assumed equal to the stream velocity.

If it is suitably demonstrated that a reasonable potential for lethality or chronic impacts within the physical mixing area doesn't exist, then the basic complete mix equation, with 100% of the applicable stream flow, is appropriate. If the mixing analysis determines there is a potential for lethality or chronic impacts within the physical mixing area, then the proportion of stream flow that has mixed with the effluent over the allowed exposure time is used in the basic complete mix equation. As such, the wasteload allocation equation is modified to account for the decimal fraction of critical flow (f).

Storm water discharges are considered intermittent and infrequent and the only concern would be acute water quality impacts. The duration of a discharge is not expected to occur for four or more consecutive days (96 hours). Therefore, only the acute wasteload allocations (WLA_a) need to be addressed. Water Quality Criteria for human health (and chronic toxicity to a lesser degree) are based upon long term, continuous exposure to pollutants from effluents, and storm water discharges are short term and intermittent. Therefore, it is believed that the human health and chronic criteria are not applicable to storm water discharges. If it is raining sufficient amount to generate a discharge of storm water, it is assumed that the receiving stream flow will be greater than the critical flow due to storm water runoff within the stream's drainage area. In recognition of the dilution caused by the rainfall, the WLA_a was calculated by multiplying the acute Water Quality Standard by 2 for effluent dominated streams.

The VPDES Permit Advice Memorandum for Individual Storm Water Permits and OWPS Guidance Memo 96-001 recommends that specific-chemical water quality-based limits not be placed on storm water discharges at this time because the methodology for developing limits and the proper method of sampling is still a under review by EPA. Also, EPA produced document dated August 1, 1996, entitled Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits, indicating that an interim approach to limiting storm water could be through the use of best management practices rather than numerical limits.

Therefore, where applicable in lieu of establishing numerical limits, staff will establish monitoring requirements and decision criteria, which have been based on 2 times the acute criteria for the various stormwater discharges. In order to address the pollutants being discharged, a special condition which requires the development of a “Storm Water Pollution Prevention Plan” (SWPPP) shall be required by this permit.

Further, the VPDES Permit Advice Memorandum for Individual Storm Water Permits recommends for any individual permit being issued which covers a storm water discharge from one of the 29 regulated industrial categories included within 9 VAC 25-151-10 et seq. (general permit for storm water associated with an industrial facility), that it include any sector-specific permit requirements contained in Part IV of the general permit. For the specific industrial category being individually permitted, consideration should be given to monitoring for some or all of the noted pollutants of concern contained in Part I.C. of that general permit. Staff will use this advice as the basis to also include monitoring requirements any other pollutants of concern for these discharges. The storm water pollution prevention plan should be aimed at reducing the pollutants of concern (eg. to a level at or below the noted decision criteria cut-off concentrations). The receiving streams designated as Class III waters have similar critical stream flows. Since the 1Q10, 7Q10 and 30Q5 are zero for these streams, the corresponding wasteload allocations will be equal to the applicable in-stream water quality criteria. Wasteload allocations for discharges into freshwater swamps are also set equal to the applicable

water quality standards since the discharge is not expected to rapidly mix in such situations.

For discharges influenced by tides, wasteload allocations should be based on site specific information concerning waste dispersion. Quantico MCB initiated a mixing zone study of the Quantico Bight, an Embayment of the Potomac River, to determine its dilution capabilities. This was done to determine applicable dilution ratio's that could be applied to the expanded discharge from the Quantico Mainside STP, VA0028363. The acute dilution ratio has been determined to be 10:1. The mixing study and dilution ratio determination was reviewed by DEQ's Central Office, and found to be acceptable (Attachment 8). Since several of the outfalls from the industrial permit VA0002151, discharge to the Bight or directly to the Potomac River in the same general area, staff will use their Best Professional Judgment (BPJ) and apply the same acute dilution ratio to these discharges as established by the mixing zone study. Staff will also use their BPJ in establishing the chronic dilution ratio as 50:1. Staff makes the assumption that if a 10:1 dilution can be obtained in one hour then it should be reasonable to assume that 50:1 can be obtained in 96 hours. Also staff feels the 50:1 ratio is conservative in that it is also DEQ's default dilution ratio applied to tidal situations.

c) Effluent Limitations –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges. The monitoring and limit evaluations for each outfall are presented in Section 19 of the Fact Sheet.

d) Effluent Limitations and Monitoring Summary.

The effluent limitations as well as the basis for the monitoring and limitations are presented in the following tables.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual with consideration given for monitoring reductions when an outfall has maintained compliance with all established limitations.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19.a. Effluent Limitations/Monitoring Requirements: Outfall 003 (Mainside WTP backwash water)

The average flow is estimated to be 0.053 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/Dis/M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/Dis/M	Grab
Total Suspended Solids	2, 4	30 mg/L	NA	NA	60 mg/L	1/Dis/M	5G/8H
Total Residual Chlorine	3	0.038 mg/L	NA	NA	0.038 mg/L	1/Dis/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. 9VAC25-860

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate

1/Dis/M = Once per discharge per month.

5G/8H = 5 Grab/Eight Hour Composite - Consisting of five (5) grab samples collected at hourly intervals until the discharge ceases or five (5) grab samples taken at equal time intervals for the duration of the discharge if the discharge is less than 8 hours in length.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The facility does not discharge on a monthly basis from this outfall. According to the application, there has been no discharge from this outfall since June 1997. Usually, the discharge is directed to the base's sanitary system and ultimately to the Mainside STP. These requirements are included in the permit in the event the water treatment plant has to discharge through outfall 003.

pH: pH limitations are set at the water quality criteria.

Total Suspended Solids: The Total Suspended Solids limitations of monthly average of 30 mg/L and maximum limit of 60 mg/L will be carried forward with this permit reissuance. The limit is included to ensure proper operation and maintenance of the settling pond. The limits were derived from requirements at other industrial facilities providing sedimentation of backwash water and are also those set forth in 9VAC25-860 VPDES General Permit for Potable Water Treatment Plants.

Total Residual Chlorine: A monthly average of 0.038 mg/L and a daily maximum of 0.038 mg/L are proposed. Since the discharge from the Water Treatment Plant is intermittent, the limits have been based on twice the acute criteria of 0.019 mg/L. The wasteload allocation will be set to equal to 2 times the Acute Criteria. This was done based on the fact that the receiving stream (Chopawamsic Creek) at the discharge point is considered a swamp and mixing zones cannot easily be applied in this situation. See Attachment 9.

19.b. Effluent Limitations/Monitoring Requirements: Outfall 007 (Stormwater from the Mainside STP)

Flow dependent on rainfall; 0.24 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/YR	Grab
Total Suspended Solids (mg/L)	2	NA	NA	NA	NL	1/YR	Grab
Total Petroleum Hydrocarbons* (mg/L)	2	NA	NA	NA	NL	1/YR	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The annual monitoring period shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

pH: pH limitations are set at the water quality criteria.

Total Suspended Solids: The Total Suspended Solids monitoring is included to insure that the impervious areas at the STP are maintained in accordance with the Stormwater Pollution Prevention Plan (SWPPP). If problems are noted, limitations may be considered in future reissuances.

Total Petroleum Hydrocarbons: Due to the nature of the materials stored at the sewage treatment plant, it is staff's best professional judgment that TPH monitoring be included for this outfall to insure that the best management practices are effective.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

19.c. Effluent Limitations/Monitoring Requirements: Outfall 009 (NCO Swimming Pool)

Maximum Flow of this discharge is 0.07 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD) (May-Sept)	NA	NL	NA	NA	NL	1/M	EST
pH (May-Sept)	3	NA	NA	6.0 s.u.	9.0 s.u.	1/M	Grab
Total Residual Chlorine (May-Sept)	3	0.038 mg/L	NA	NA	0.038 mg/L	1/M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/M = Once every month.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The discharge from Outfall 009 is considered to intermittent and results from stormwater runoff (100 GPD) overflow from the pool (100 GPD) and annual pool draining (70,000 GPD for 11 days). The sampling and reporting requirements are seasonal (months of May through September) due to operation of the pool.

pH: The limitations for pH are based on the Water Quality Standards.

Total Residual Chlorine: A monthly average of 0.038 mg/L and a maximum of 0.038 mg/L are proposed to be carried forward with this reissuance. Since the discharge from Outfall 009 is intermittent, the wasteload allocation will be set to equal to 2 times the Acute Criteria of 0.019 mg/L. This was done based on the fact that the receiving stream (Chopawamsic Creek, UT) at the discharge point is considered a tidal swamp and mixing zones cannot be applied in this situation. See Attachment 9.

19.d. Effluent Limitations/Monitoring Requirements: Outfall 010 Mainside Drainage North (Non-Contact Cooling Water, Steam Condensate and Stormwater)

Maximum Flow of this outfall is 0.323 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/M	Grab
Total Residual Chlorine (May-Sept)	3	0.19 mg/L	NA	NA	0.19 mg/L	1/M	Grab
Temperature	3	NA	NA	NA	32°C	1/M	IS
Whole Effluent Toxicity (TU_c)	2	NA	NA	NA	NL	1/YR	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.
EST = Estimate

1/M = Once every month.
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

While the majority of the flow to this outfall is from stormwater, there are contributions fromnon-contact cooling water (NCCW) and steam condensate. Since there is a reasonable potential for the discharge to exceed 96 hours in duration due to the steam condensate and NCCW, the discharge cannot be considered to intermittent. Therefore, the need for an effluent limit using both the acute and chronic criteria will be evaluated. The Potomac River is tidal at the discharge point, therefore, the acute dilution ratio of 10:1 and the chronic dilution ratio of 50:1, are used to determine the wasteload allocations.

pH: The limitations for pH are based on the Water Quality Standards.

Total Residual Chlorine: Since there is reasonable potential that total residual chlorine could be present in the discharge from the NCCW, the effluent was evaluated for TRC limits. The average daily and maximum daily limits were determined to be 0.19 mg/L (Attachment 9).

Metals: The historical average total hardness value is 54.5 mg/L for this outfall. The historical Appendix-A monitoring results and the applicable metals criteria are shown in Attachment 10. During the 2006 reissuance, it was determined that no limits or additional monitoring requirements were necessary for any of the metals monitored.

Temperature: The value for temperature of 32°C has been established as a maximum value allowable for monitoring purposes. This value has been derived from the Water Quality Standard (WQS), for temperatures in a Class III water-body. It is staff's Best Professional Judgment that if the maximum value of 32°C is maintained at the point of discharge, then the WQS, which states that any rise in temperature above background conditions shall not exceed 3°C outside the mixing zone, will be protected.

Toxics Monitoring Program (TMP): As part of 2006 reissuance, a monitoring program for chronic toxicity was required for this outfall. The toxicity monitoring was conducted during the months when the cooling towers were in operation and discharging. The acute and chronic monitoring endpoints were determined during the last reissuance using the 10:1 and 50:1 dilution ratios established as part of the approved mixing zone study of the Quantico Bight. Attachment 11 shows the determinations of the endpoints and the data review and summary. The monitoring endpoints of 25.0 TU_c will be used to determine if the effluent has passed or failed the toxicity monitoring requirements. In lieu of testing for both acute and chronic toxicity, the permittee shall be allowed to monitor for chronic toxicity and provide additional data to derive the acute toxicity values.

19.e. Effluent Limitations/Monitoring Requirements: Outfall 014 (HMX-1 Hangars and Maintenance, Steam Condensate and Stormwater)

Maximum Flow of this discharge is 0.092 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/M	Grab
Temperature	3	NA	NA	NA	32°C	1/M	IS

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.
EST = Estimate

1/M = Once every month.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The discharge is intermittent (storm water) in nature with some influence from steam condensate, 1,000 GPD during the heating season. The Potomac River is tidal at the discharge point; therefore, the acute dilution ratio of 10:1 and the chronic dilution ratio of 50:1 are used to determine the applicable wasteload allocations.

pH: The limitations for pH are based on the Water Quality Standards.

Temperature: The value for temperature of 32°C has been established as a maximum value allowable for monitoring purposes and is proposed to be carried forward with this reissuance. This value has been derived from the Water Quality Standard (WQS), for temperatures in a Class III water-body. It is staff's Best Professional Judgment that if the maximum value of 32°C is maintained at the point of discharge, then the WQS, which state that any rise in temperature above background conditions shall not exceed 3°C outside the mixing zone, shall be protected.

Metals: Copper (6.8 ug/L) and Zinc (37 ug/L) were detected in the effluent during the testing done for the application for reissuance. The WLAs for both were determined using the above dilution ratio. The Copper WLAs are 70 ug/L acute and 50 ug/L chronic. It is staff's best professional judgment that there is no reasonable potential to exceed the Copper Water Quality Criteria and no limits or monitoring are necessary. The Zinc WLAs are 650 ug/L acute and 660 ug/L chronic. It is staff's best professional judgment that there is no reasonable potential to exceed the Zinc Water Quality Criteria and no limits or monitoring are necessary.

19.f. Effluent Limitations/Monitoring Requirements: Outfall 016 Mainside Drainage – South (Stormwater, Steam Condensate, Non-Contact Cooling Water, Water Softener Backwash)
Maximum Flow of this outfall is 0.76 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/M	Grab
Total Suspended Solids (mg/L)	2	NA	NA	NA	NL	1/M	Grab
Temperature	3	NA	NA	NA	32°C	1/M	IS
Total Residual Chlorine (May-Sep)	3	NA	NA	NA	0.19 mg/L	1/M	Grab
Total Petroleum Hydrocarbons*	2	NA	NA	NA	30 mg/L	1/3M	Grab
Acute Whole Effluent Toxicity	3	NA	NA	NA	2.94 TU_a	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.
EST = Estimate

1/M = Once every month.
1/3M = Once every three months.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The discharge is considered to be intermittent (storm water) with some influence from noncontact cooling water. Steam condensate is no longer discharged from this outfall. There are also discharges from the Oil/Water Separators located at the CHP Fuel Storage Tank Containment Area and the Motor Pool. The Potomac River is tidal at the discharge point; therefore, the acute dilution ratio of 10:1 and the chronic dilution ratio of 50:1 are used to determine the applicable wasteload allocations.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

pH: The limitations for pH are based on the Water Quality Standards.

Metals: The historical average total hardness value is 29.9 mg/L for this discharge. The historical Appendix-A monitoring results and the applicable metals criteria are shown in Attachment 12. After comparing the Appendix-A monitoring results to the applicable wasteload allocations, it was determined during the 2001 reissuance that no limits or additional monitoring requirements are necessary for any of the metals monitored.

Total Residual Chlorine: Since there is reasonable potential that total residual chlorine could be present in the discharge from the noncontact cooling water, the effluent was evaluated for TRC limits. The maximum daily limit was determined to be 0.19 mg/L (Attachment 9).

Temperature: The value for temperature of 32°C has been established as a maximum value allowable for monitoring purposes. This value has been derived from the Water Quality Standard (WQS), for temperatures in a Class III water-body. It is staff's Best Professional Judgment that if the maximum value of 32°C is maintained at the point of discharge, then the WQS, which state that any rise in temperature above background conditions shall not exceed 3°C outside the mixing zone, will be protected.

Total Petroleum Hydrocarbons: Past permits contained monitoring requirements for oil and grease. During the 2006 reissuance, DEQ made a determination (Guidance Memorandum No. 96-002) that monitoring for total petroleum hydrocarbon (TPH) was more appropriate for this type of industrial discharge than Oil & Grease monitoring. Oil & Grease analysis is considered a measure of fatty matter from animal and vegetable sources in addition to hydrocarbons. This permit proposes to carry forward the technology and performance-based average monthly limit of 30 mg/L for the parameter Total Petroleum Hydrocarbons (TPH). It is based on the ability of simple oil/water separator technology to recover free product from water. Wastewater that is discharged without a visible sheen is generally expected to meet this effluent limitation.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

Whole Effluent Toxicity (WET): The previous permits required the permittee to monitor Outfall 016 for Whole Effluent Toxicity. Outfall 16 failed the toxicity testing criteria, was placed under a Toxicity Reduction Evaluation (TRE) program, and also given a schedule of compliance. Since the TRE was unable to identify a specific parameter that would be cause the toxicity problem, a WET limit was established as part of the 2001 reissuance. The WET limit in the table above has been determined using the 10:1 dilution ratio established as part of the approved mixing zone study of the Quantico Bight. Attachment 13 shows the determination of the limit and review of the submitted data.

19.g. Effluent Limitations/Monitoring Requirements: Outfall 018 (HMX-1 Supply Depot)

Flow dependent on rainfall; 0.6 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type

THERE SHALL BE NO DISCHARGE OF PROCESS WASTEWATERS FROM THIS DRAINAGE AREA.

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate

The drainage area includes the HMX-1 building which contains short term and 90-day hazardous waste storage. Only stormwater is authorized to be discharged from this outfall. The area shall be managed in accordance with the facility's Stormwater Pollution Prevention Plan as specified in Fact Sheet Section 20.c.(Permit Part I.D).

19.h. Effluent Limitations/Monitoring Requirements: Outfall 030 Bobo Hall (Refrigerator Condensate and Stormwater)

Maximum Flow of this outfall is 0.0023 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/3M	Grab
Total Suspended Solids (mg/L)	2	NA	NA	NA	NL	1/3M	Grab
Oil & Grease (mg/L)	2	NA	NA	NA	NL	1/3M	Grab
Temperature	3	NA	NA	NA	32°C	1/3M	IS

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion Stabilization.
EST = Estimate

1/3M = Once every three months.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The discharge is considered to be intermittent in nature with stormwater being the main contributor to the flow. The Potomac River is tidal at the discharge point, therefore, the acute dilution ratio of 10:1 and the chronic dilution ratio of 50:1, are used to determine the applicable wasteload allocations. Any flow from the loading dock is discharged to the sanitary system.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

pH: The limitations for pH are based on the Water Quality Standards.

Total Suspended Solids (TSS): Staff proposes to carry forward the TSS monitoring with this reissuance.

Temperature: During the 2006 reissuance, the application indicated that the refrigerator condensate was removed from the waste stream to the outfall and staff removed the temperature monitoring. The 2011 reissuance application indicates that a very small fraction of the discharge is from steam condensate, so, it is staff's best professional judgment that a temperature maximum limit of 32°C be included and monitored once every three months.

Oil & Grease: Since the drainage area includes the loading zone near the kitchen facility, it is staff's best professional judgment that Oil&Grease be monitored at this outfall.

Toxics Monitoring Program (TMP): The 2001 permit reissuance removed the toxicity monitoring from this outfall because the testing passed all the decision criteria. No further toxicity testing is proposed for this outfall.

Metals: Zinc (45 ug/L) was detected in the effluent during the testing done for the application for reissuance. The WLAs were determined using the above dilution ratio. The Zinc WLAs are 650 ug/L acute and 660 ug/L chronic. It is staff's best professional judgment that there is no reasonable potential to exceed the Zinc Water Quality Criteria and no limits or monitoring are necessary.

19.i. Effluent Limitations/Monitoring Requirements: Outfall 035 HMX-1 Airfield BOQ (Non-contact cooling water, Steam Condensate, and Stormwater)

Maximum Flow of this outfall is 0.016 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	EST
pH	3	NA	NA	6.0 s.u.	9.0 s.u.	1/3M	Grab
Total Suspended Solids (mg/L)	2	NA	NA	NA	NL	1/3M	Grab
Temperature	3	NA	NA	NA	32°C	1/3M	IS
Total Residual Chlorine (May-Sept)	3	0.038 mg/L	NA	NA	0.038 mg/L	1/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.
EST = Estimate

1/D = Once every day.
1/M = Once every month.
1/3M = Once every three months.
3D/W = Three days a week.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Outfall 035 discharges to a tidal swamp unnamed tributary to the Potomac River. The discharge is considered to be intermittent. Since the discharge from outfall 035 is to a tidal swamp, the wasteload allocations will be determined using the default dilution ratios of 2:1 and 50:1. This was done based on the fact that mixing zones cannot be applied in tidal situations.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

pH: The limitations for pH are based on the Water Quality Standards.

Metals: The historical average total hardness value is 73.7 mg/L for this discharge. The historical Appendix-A monitoring results and the applicable metals criteria are shown in Attachment 14. During the 2001 reissuance, it was determined that no additional monitoring was required.

Temperature: During the 2006 reissuance, the application indicated that the steam condensate was removed from the waste stream to the outfall and staff removed the temperature monitoring. The 2011 reissuance application indicates that a very small fraction of the discharge is from steam condensate, so, it is staff's best professional judgment that a temperature maximum limit of 32°C be included and monitored once every three months.

Total Suspended Solids (TSS): Staff proposes to carry forward the TSS monitoring with this reissuance.

Total Residual Chlorine: A monthly average of 0.038 mg/L and a maximum of 0.038 mg/L are proposed with this reissuance. Since the discharge from outfall 035 is intermittent, the wasteload allocation will be set to equal to 2 times the Acute Criteria. This was done based on the fact that the receiving stream at the discharge point is considered a tidal swamp and mixing zones cannot be applied in this situation.

Toxics Monitoring Program (TMP): As part of the 2001 permit reissuance, a monitoring program for acute and chronic toxicity was required for Outfall 035. The toxicity monitoring was required to be conducted during the months when the cooling towers were in operation and discharging. The monitoring endpoints were determined using the default tidal dilution ratios. Attachment 15 shows the determination of the endpoints. The monitoring endpoints of 1.0 TU_a and 5.55 TU_c will be used to determine if the effluent has passed or failed the toxicity monitoring requirements. A review of the toxicity monitoring during the 2001-2006 permit cycle indicates that the effluent passed the requirements for all but one test. The failure of the August 2005 test is believed to be due to pathogen interference and not the effluent. In 2006, it was staff's best professional judgment that the annual monitoring could cease at this outfall.

19.j. Effluent Limitations/Monitoring Requirements: Outfall 072 (Stormwater from the Fuel Farm)

Flow dependent on rainfall; 2.5 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	EST
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab
Total Suspended Solids	2	NA	NA	NA	60 mg/L	1/3M	Grab
Total Petroleum Hydrdocarbons*	2	NA	NA	NA	15 mg/L	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/3M = Once every three months.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

pH: The limitations for pH are based on the Water Quality Standards.

Total Petroleum Hydrocarbons: A TPH daily maximum limit of 15.0 mg/L is proposed. This limit was added since TPH is more appropriate for this industry than Oil & Grease monitoring (Guidance Memorandum No. 96-002). The limit of 15.0 mg/L is based on the ability of simple oil/water separator technology to recover free product from water. Wastewater discharged without a visible sheen is generally expected to meet this effluent limitation. TPH monitoring data indicates that the facility is consistently below this permit limit.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

Total Suspended Solids: With this reissuance, staff added a TSS maximum limitation of 60 mg/L for Outfall 072 in accordance with the current Permit Manual guidance. The limit is included to ensure proper operation and maintenance of the storm water pond. The limit was derived from requirements at other industrial facilities providing sedimentation of storm water runoff.

Toxics Monitoring Program (TMP): This outfall has previously passed the decision criteria for acute toxicity and the TMP monitoring requirement was removed from this outfall during the 2001 reissuance. No further toxicity monitoring is proposed in the reissued permit.

19.k. Effluent Limitations/Monitoring Requirements: Outfall 721 (Hydrostatic test waters internal outfall)

Flow of this discharge is dependent on the size of the tank tested.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	2/Dis	EST
pH (S.U.)	3	NA	NA	6.0 S.U.	9.0 S.U.	2/Dis	Grab
Total Suspended Solids (mg/L)	2	NL	NA	NA	NL	2/Dis	Grab
Total Petroleum Hydrocarbons* (mg/L)	2	NL	NA	NA	15 mg/L	2/Dis	Grab
Total Residual Chlorine (mg/L)	3	NA	NA	NA	0.019 mg/L	2/Dis	Grab
Total Organic Carbon (mg/L)	2	NL	NA	NA	NL	2/Dis	Grab
Benzene (µg/L)	2	NA	NA	NA	50 µg/L	2/Dis	Grab
Ethylbenzene (µg/L)	2	NA	NA	NA	320 µg/L	2/Dis	Grab
Toluene (µg/L)	2	NA	NA	NA	175 µg/L	2/Dis	Grab
Total Xylenes (µg/L)	2	NA	NA	NA	33 µg/L	2/Dis	Grab
Naphthalene** (µg/L)	2	NA	NA	NA	10 µg/L	2/Dis	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
2/Dis = Twice per discharge.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

2/Dis - Contingent, 2 samples per tank tested. The first sample shall be collected during the initial discharge or be a representative sample collected and analyzed prior to discharge. The second sample shall be collected during the discharge of the final 20% by volume or the last two feet of hydrostatic tank test water.

Benzene: The EPA criteria document for benzene (EPA 440/5-80-018, EPA 1980a) states that benzene may be acutely toxic to freshwater organisms at concentrations as low as 5,300 µg/L. This is an LC50 value for rainbow trout. The document also states that acute toxicity would occur at lower concentrations among more sensitive species. No data were available concerning the chronic toxicity of benzene to sensitive freshwater organisms. The derivation of a "safe level" for benzene was based on the 5,300 µg/L LC50. This value was divided by 10 in order to approximate a level which would not be expected to cause acute toxicity. (The use of an application factor of 10 was recommended by the National Academy of Sciences in the EPA's publication "Water Quality Criteria, 1972" (EPA/R3/73-033). This use of application factors when setting water quality criteria is still considered valid in situations where data are not sufficient to develop criteria according to more recent guidance.) The resulting "non-lethal" concentration of 530 µg/L was divided by an assumed acute to chronic ratio of 10 to arrive at the water quality-based permit limitation of 53 µg/L. When actual data are not available, EPA, in the Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001) recommends using an acute to chronic ratio of 10). The EPA model permit's technology-based 50 µg/L value is more protective, therefore, it was chosen over the 53 µg/L water quality-based concentration.

Ethylbenzene: The EPA criteria document for ethylbenzene (EPA 440/5-80-048, EPA 1980b) gives an acute effects concentration of 32,000 µg/L. This is an LC50 for bluegill sunfish. Acute toxicity may occur at lower concentrations if more sensitive species were tested. No definitive data are available on the chronic toxicity of ethylbenzene to freshwater organisms. In order to derive an acceptable level of ethylbenzene for the protection of freshwater organisms the acute value of 32,000 µg/L was divided by 100, using the same assumptions employed above for benzene. The resulting value of 320 µg/L is a calculated chronic toxicity concentration for ethylbenzene.

Toluene: The EPA criteria document for toluene (EPA 440/5-80-075, EPA 1980c) states that acute toxicity to freshwater organisms occurs at 17,500 µg/L and would occur at lower concentrations if more sensitive organisms were tested. No data are available on the chronic toxicity of toluene to freshwater species. Based on the available data for acute toxicity and dividing by the application factor of 100, the proposed effluent limit for toluene discharged to freshwater is 175 µg/L.

Xylene: The current permit has a maximum limitation of 82 ug/L; this reissuance proposes a maximum limitation of 33 ug/L based on current guidance. Xylene is not a 307(a) priority pollutant, therefore no criteria document exists for this compound. There are three isomers of xylene (ortho, meta and para) and the general permit limits are established so that the sum of all xylenes is considered in evaluating compliance. The proposed effluent limits are based on a search of the EPA's ECOTOX data base. According to ECOTOX, the lowest freshwater LC50 for xylenes is 3,300 µg/L reported for rainbow trout (Mayer and Ellersieck 1986). Based on the rationale presented earlier for other compounds, this acutely toxic concentration was divided by 10 to account for species that were not tested but which may be more sensitive than rainbow trout. Then, in order to find a concentration that is expected to be safe over chronic exposures, an additional safety factor of 10 was applied to arrive at the proposed effluent limitation of 33 µg/L total xylenes.

Naphthalene: The current permit has a maximum limitation of 62 ug/L; this reissuance proposes a maximum limitation of 10 ug/L based on current guidance. The EPA criteria document for naphthalene (EPA 440/5-80-059) gives a chronic effect concentration of 620 µg/L with fathead minnows, but it states that effects would occur at lower concentrations if more sensitive freshwater organisms were tested. According to the ECOTOX DATABASE, naphthalene at a concentration of 1,000 µg/L was lethal to 50% of the water fleas (Daphnia pulex) tested (Truco et al. 1983). DeGaere and associates (1982) tested the effects of naphthalene on Rainbow Trout and reported an LC50 concentration of 1600 µg/l. Based upon these more recent studies, it is recommended that the effluent limit for naphthalene in freshwater be set at 10 µg/L.

**Naphthalene monitoring shall only be required when hydrostatic testing occurs on tanks containing aviation gasoline, jet fuel, or diesel.

pH: The limitations for pH are based on the Water Quality Standards.

Total Petroleum Hydrocarbons: An instantaneous maximum limit of 15.0 mg/L is based on the ability of simple oil/water separator technology to recover petroleum from water.

Total Suspended Solids: TSS is monitored to assure that the effluent is not contaminated with excessive amounts of solids that might be flushed out of the ASTs, pipes, or tanker trucks along with the test waters. If significant concentrations of suspended solids are detected, the permit may be modified at a later time to include a limit.

Total Organic Carbon: Current guidance suggests that no limit be imposed, but monitoring be conducted. TOC will be monitored to ensure that the effluent is not contaminated with non-petroleum organic substances. It is believed that TOC concentrations in this type of effluent are low. If sampling indicates high levels of TOC, the permit may be modified at a later time to include a TOC limit.

Total Residual Chlorine: Total Residual Chlorine limits are to be considered for Internal Outfall 721. Potable water is utilized for hydrostatic testing. Potable water contains measurable amounts of chlorine (1.0-3.0 mg/L). TRC limitations are established to prevent impacts (acute and chronic) to aquatic organisms. The TRC limitation is only applicable if the water used in the test has been chlorinated. A limit of 0.019 mg/L instantaneous maximum is proposed based on the acute aquatic life criterion in Virginia's water quality standards.

19.l. Effluent Limitations/Monitoring Requirements: Outfalls 073 and 074 (Stormwater from the Old Landfill site)

Flow dependent on rainfall; 16.5 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	EST
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Total Suspended Solids* (mg/L)	2	NA	NA	NA	NL	1/YR	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Discharges are the result of storm events and stormwater drainage from the old landfill.

The annual monitoring periods shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

*The monitoring endpoint criteria for TSS has been established as 100 mg/L. This value was derived from the monitoring-cut off concentration found in the Stormwater Industrial General Permit (VAR5) monitoring requirements for landfills, land application sites and open dump sites.

pH: The limitations for pH are based on the Water Quality Standards.

Total Suspended Solids (TSS): Staff proposes to carry forward the TSS monitoring with this reissuance.

Metals: A total hardness value of 25 mg/L was applied and used to determine the applicable water quality criteria. The past Appendix-A monitoring results are summarized in Attachment 16. The discharge results from stormwater runoff from the landfill and is therefore considered to be intermittent. Only the acute criteria will be used to determine the wasteload allocation. The acute wasteload allocation was determined using the 2:1 dilution ratio. During this reissuance, it is staff's best professional judgment that no additional monitoring requirements are necessary for any of the metals.

19.m. Effluent Limitations/Monitoring Requirements: Outfall 075 (Construction Equipment Repair)

Flow dependent on rainfall; 4.8 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type

THERE SHALL BE NO DISCHARGE OF PROCESS WASTEWATERS FROM THIS DRAINAGE AREA.

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate

The drainage area for this outfall includes the building where construction equipment repair is performed. Only stormwater is authorized to be discharged from this outfall. No waters generated as a result of the equipment repair shall be discharged from this outfall.

19.n. Effluent Limitations/Monitoring Requirements: Outfalls 086 and 090 (Stormwater from Russell Road Landfill.)

Outfall 086 - Flow dependent on rainfall; 40 total acres in drainage area.
Outfall 090 - Flow dependent on rainfall; 80 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/3M	EST
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/3M	Grab
Total Suspended Solids* (mg/L)	2	NA	NA	NA	NL	1/3M	Grab

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate
1/3M = Once every three months.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

The discharges from these outfalls result from stormwater runoff from the Russell Road landfill. The landfill has been capped and closed for several years. Storm water discharges are considered intermittent and infrequent and the only concern would be acute water quality impacts. The duration of a discharge is not expected to occur for four or more consecutive days. Therefore, only the acute wasteload allocations (WLA_a) need to be addressed. Water Quality Criteria for human health (and chronic toxicity to a lesser degree) are based upon long term, continuous exposure to pollutants from effluents, and storm water discharges are short term and intermittent. It is believed that the human health and chronic criteria are not applicable to storm water discharges. If it is raining a sufficient amount to generate a discharge of storm water, it is assumed that the receiving stream flow will be greater than the critical flow due to storm water runoff within the stream's drainage area. In recognition of the dilution caused by the rainfall, the WLA_a was calculated by multiplying the acute Water Quality Criteria by 2 for effluent dominated streams.

***Total Suspended Solids (TSS):** The monitoring endpoint for TSS has been established as 100 mg/L. This value was derived from the monitoring-cut off concentration found in the Stormwater Industrial General Permit (VAR5) monitoring requirements for landfills, land application sites and open dump sites.

pH: The limitations for pH are based on the Water Quality Standards.

19.o. Effluent Limitations/Monitoring Requirements: Outfall 091 (Stormwater from the Jet Engine Test Pads)

Flow dependent on rainfall; 0.27 total acres in drainage area.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Daily Maximum	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/YR	EST
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/YR	Grab
Total Petroleum Hydrdocarbons* (mg/L)	2	NA	NA	NA	NL	1/YR	Grab
Temperature (^{O}Celsius)	3	NA	NA	NA	32^{o}C	1/YR	IS

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
IS = Immersion stabilization.
EST = Estimate
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*Total Petroleum Hydrocarbons (TPH) is the sum of individual gasoline range organics and diesel range organics or TPH-GRO and TPH-DRO to be measured by EPA SW 846 Method 8015C (2007) for gasoline and diesel range organics, or by EPA SW 846 Methods 8260B and 8270D. If the combination of Methods 8260B and 8270D is used, the lab must report the total of gasoline range organics, diesel range organics and polynuclear aromatic hydrocarbons.

The annual monitoring periods shall be January through December. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

The discharge is manually initiated by pumping the stormwater to a drainage swale leading to the Potomac River. The stormwater is visually inspected for any sheen before being pumped to the drainage swale.

pH: The limitations for pH are based on the Water Quality Standards.

Total Petroleum Hydrocarbons: Monitoring is included to insure that the levels of TPH will not cause or contribute to any water quality impairments. Should elevated levels be noted, a limit may be included in future permits.

Temperature: The value for temperature of 32^{o}C has been established as a maximum value allowable for monitoring purposes. This value has been derived from the Water Quality Standard (WQS), for temperatures in a Class III water-body. It is staff's "Best Professional Judgment" that if the maximum value of 32^{o}C is maintained at the point of discharge, then the WQS, which states that any rise in temperature above background conditions shall not exceed 3^{o}C outside the mixing zone, will be protected.

Phthalates: Monitoring done as part of the application for reissuance indicates that bis(2-ethylhexyl)phthalate at 8.4 ug/L and Di-n-octyl phthalate at 4 ug/L were detected in the effluent. There is a human health criterion of 220 ug/L for bis(2-ethylhexyl)phthalate and it is staff's best professional judgment that there is no reasonable potential to exceed this criterion and no limits or further monitoring is warranted. There is no Water Quality Standard for Di-n-octyl phthalate, but it is staff's best professional judgment that no limit is necessary and no additional monitoring is warranted.

20. Other Permit Requirements:

a) Part I.B. of the permit contains quantification levels and compliance reporting instructions. 9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Permit Section Part I.C., details the requirements for Toxics Management Program.

The VPDES Permit Regulation at 9VAC25-31-210 requires monitoring and 9VAC25-31-220.I, requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. A TMP is imposed for municipal facilities with a design rate >1.0 MGD, with an approved pretreatment program or required to develop a pretreatment program, or those determined by the Board based on effluent variability, compliance history, IWC, and receiving stream characteristics.

Outfalls 010 and 016 are currently the only outfalls that have monitoring under the Toxics Management Program. See Attachments 11 and 13 for summaries of the monitoring as well as the establishment of the monitoring endpoints for each outfall.

c) Permit Section Part I.D. details the requirements of a Storm Water Management Plan.

9VAC25-31-10 defines discharges of storm water from municipal treatment plants with design flow of 1.0 MGD or more, or plants with approved pretreatment programs, as discharges of storm water associated with industrial activity. 9VAC25-31-120 requires a permit for these discharges. The pollution Prevention Plan requirements are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9VAC25-151-10 et seq.

21. Other Special Conditions:

a) Notification Levels The permittee shall notify the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter;

(2) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;

(3) Five times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(1) Five hundred micrograms per liter;

(2) One milligram per liter for antimony;

(3) Ten times the maximum concentration value reported for that pollutant in the permit application; or

(4) The level established by the Board.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of

Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) Materials Handling/Storage. 9VAC25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and §62.1-44.17 authorize the Board to regulate the discharge of industrial waste or other waste.

d) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

e) Hydrostatic Testing. The permittee shall obtain approval from the DEQ Northern Regional Office forty-eight (48) hours in advance of any discharge resulting from hydrostatic testing. The conditions of approval will be contingent on the volume and duration of the proposed discharge, and the nature of the residual product.

f) No Discharge of Detergents, Surfactants, or Solvents to the Oil/Water Separators. This special condition is necessary to ensure that the oil/water separators' performance is not impacted by compounds designed to emulsify oil. Detergents, surfactants, and some other solvents will prohibit oil recovery by physical means.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:

b) Monitoring and Effluent Limitations:
1) The monitoring for Outfalls 013, 019, and 022 was removed from the permit.
2) Outfall 007 (Stormwater from the Sewage Treatment Plant) was added to the permit.
3) Temperature monitoring and limitations were added to Outfall 035.
4) BOD monitoring was removed from Outfall 019.
5) A TSS limitation was added to Outfall 072.
6) The BTEX limitations were revised for Outfall 721 based on current guidance.
7) Monitoring for Outfall 003 was changed from 1/M to 1/Discharge/Month.

24. Variances/Alternate Limits or Conditions:

None

25. Public Notice Information:

First Public Notice Date: 6/23/11 Second Public Notice Date: 6/30/11

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, Alison.Thompson@deq.virginia.gov. See Attachment 17 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer

and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

See the Planning Statement in Attachment 3 for the full Planning Statement.

The pH TMDL for Chopawamsic Creek is scheduled for completion in 2014.

The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA. A WLA was not assigned to this facility in the Potomac PCB TMDL. There is extensive CERCLA work underway at the old Superfund landfill site (known as Site 4) on the base. The sight was located on a piece of land adjacent to the bight. In correspondence with Quantico staff they noted,

> As part of the Long Term Monitoring Plan [for Site 4], 21 monitoring wells were sampled for the first five quarters beginning in December 2008 through December 2009. The groundwater samples were analyzed for: Target Compound List (TCL) volatile organic compounds (VOC), TCL semivolatile organic compounds (SVCs), TCL organochlorine pesticides, PCB congeners, Target Analyte List (TAL) metals, Various water quality parameters and total suspended solids. None of the chemicals were detected in the groundwater samples at concentrations that exceeded criteria after averaging concentrations across wells and after back-calculating the criteria to the wells. None of the chemicals detected in the site groundwater samples are expected to impact human or ecological receptors after the groundwater discharges from the site.

The Chesapeake Bay TMDL was completed by EPA on 12/29/2010. In the Bay TMDL, this Industrial facility did not receive a specific individual WLA since it was classified as a nonsignificant facility but the Oligohaline segment of the Potomac River received a TMDL equation.

The biological impairment on the Potomac has not yet received a TMDL.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Additional Comments:

Previous Board Action(s): There have been no recent compliance issues with the Quantico Industrial VPDES Permit.

Staff Comments: The facility is working on updating the mixing zone study for the Quantico Bight because of additional mitigation measures to cap the sediment in the bight due to historical contamination from the old pesticide storage area. DDT concentrations are the primary concern according to Quantico staff. This area is now the Mainside STP (VA0028363). Stormwater from the STP discharges through Outfall 007. It is staff's best professional judgment that no pesticide monitoring is warranted for this stormwater outfall. During the construction of the STP and subsequent upgrades, much of the site has been excavated and paved; therefore, there is no reasonable potential for pesticides to discharge from the stormwater runoff from the STP.

Public Comment: With this reissuance, DGIF requested coordination for Threatened and Endangered species. The coordination form was sent to DGIF on February 1, 2011 and DGIF's comments received on March 21, 2011. The comments have been placed in the reissuance file.

EPA Checklist: The checklist can be found in Attachment 18.

Attachments to VA0002151 Fact Sheet

Attachment 1	Other Permits associated with this facility
Attachment 2	Flow Frequency Determinations
Attachment 3	Planning Statement
Attachment 4	Topographic Maps
Attachment 5	Material Storage
Attachment 6	Technical and Laboratory Inspection on January 9, 2009
Attachment 7	Water Quality Criteria and Wasteload Allocations
Attachment 8	Mixing Zone Study for Quantico Bight
Attachment 9	Limit Evaluations
Attachment 10	Historical Metals Results Outfall 010
Attachment 11	Toxicity Endpoint Determination and Data Review for Outfall 010
Attachment 12	Historical Metals Results Outfall 016
Attachment 13	Toxicity Endpoint Determination and Data Review for Outfall 016
Attachment 14	Historical Metals Results for Outfall 035
Attachment 15	Toxicity Endpoint Determination for Outfall 035
Attachment 16	Historical Data Results for Outfalls 072, 073, and 074
Attachment 17	Public Notice
Attachment 18	EPA Checklist

MCB Quantico VPDES Permit Renewal
Form 1, Section X – Existing Environmental Permits

A. NPDES (Discharges to Surface Water)

VA 0028371	Camp Upshur Sewage Treatment Plant
VA 0028363	Mainside Sewage Treatment Plant
VAR 10	General Construction Permits for Stormwater
VAR 040069	Municipal Separate Storm Sewer System

B. UIC (Underground Injection of Fluids)

None

C. RCRA (Hazardous Wastes)

VA1170024722 Hazardous Waste Landfill Post Closure Permit

D. Air (Air Emissions from Proposed Sources)

70267 CHP
70267 CDC

E. Other (Specify)

6153675	Waterworks Operation Permit – Mainside
VA 411	Solid Waste Management Permit
STFRD-002	Stafford County, Virginia, Significant Industrial User Permit (Categorical)
VA6153063	Camp Upshur Water System
VA6153060	Camp Barrett Water System
STFRD-003	Camp Barrett Wastewater to Stafford County Utilities

March 16, 2011
MEMORANDUM

TO: VPDES Reissuance File VA0002151

FROM: Alison Thompson

SUBJECT: Flow Frequency Determination of VPDES Permit No. VA0002151
MCB Quantico – Industrial VPDES Permit

This Flow Frequency determination supersedes the determination done in November 2000; there have been numerous changes to the permitted outfalls and many that have been removed due to changes at the MCB, so staff felt it was appropriate to review all the determinations. Staff reviewed the April 29, 1994 Memorandum from Paul Herman and the May 6, 1994 Memorandum from Jennie Dollard that were used for the 2006 reissuance. Staff also reviewed the January 2009 Technical Inspection completed by Wilamena Harback, the 2010 Permit Application, and the March 15, 2011 Planning Statement.

OUTFALL NUMBER	DISCHARGE SOURCE	STREAM DETERMINATION	OUTFALL LOCATION Latitude/Longitude
003	**Mainside WTP** Filter backwash, Stormwater	Freshwater Swamp (4/29/1994 Paul Herman Memo) – 22.5 mi^2 drainage area 3/15/2011 planning statement	38° 31'09" N 77° 22' 08" W
007	**Stormwater from the Mainside STP site**	Tidal Potomac (Dec 2010 Permit Application)	38° 30'54" N 77° 17' 55" W
009	**NCO Swimming Pool** Swimming pool filter backwash (May - Sept), Stormwater	Freshwater Swamp (4/29/1994 Paul Herman Memo) – 0.05 mi^2 drainage area 3/15/2011 planning statement	38° 30' 21" N 77° 18' 30" W
010	**Mainside Drainage - North** NCCW (May – Sept), Stormwater	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	38° 30' 21" N 77° 17' 46" W
~~013~~	**MWR Hobby Shop** ~~Storm water associated with industrial activity~~	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	Removed from this permit. Industrial activities removed from the site.
014	**HMX-1 Hangars & Maintenance -** Steam condensate & storm-water runoff	Tidal Swamp (5/6/1994 Jennie Dollard Memo)	38° 30' 36" N 77° 18' 11" W
016	**Southern Mainside Drainage -** NCCW, Stormwater runoff	Tidal Swamp (5/6/1994 Jennie Dollard Memo)	38° 30' 47" N 77° 18' 11" W
018	**HMX-1 Supply Depot** Storm water associated with industrial activity	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	38° 29' 39" N 77° 18' 39" W
019	**Aero Club** Storm water associated with Industrial activity	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	38° 30' 07" N 77° 18' 07" W
~~022~~	**MWR Auto Hobby Lot** ~~Storm water associated with industrial activity~~	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	Removed from this permit. Industrial activities removed from the site.

OUTFALL NUMBER	DISCHARGE SOURCE	STREAM DETERMINATION	OUTFALL LOCATION Latitude/Longitude
030	**BoBo Hall** Stormwater	Tidal Potomac (5/6/1994 Jennie Dollard Memo)	38° 29' 46" N 77° 18' 33" W
035	**BOQ** Stormwater	Tidal Swamp (5/6/1994 Jennie Dollard Memo)	38° 30' 43" N 77° 18' 11" W
072 / 0721	**Fuel Farm** Storm water from the tank diked area and hydrostatic tank test waters.	Intermittent Stream (4/29/1994 Paul Herman Memo) – 0.004 mi^2 drainage area 3/15/2011 planning statement	38° 31' 26" N 77° 24' 40" W
073	**Landfill** Storm water associated with industrial activity	Intermittent Stream (4/29/1994 Paul Herman Memo) – 0.008 mi^2 drainage area 3/15/2011 planning statement	38° 31' 21" N 77° 25' 31" W
074	**Landfill** Storm water associated with industrial activity	Intermittent Stream (4/29/1994 Paul Herman Memo) – 0.02 mi^2 drainage area 3/15/2011 planning statement	38° 31' 23" N 77° 25' 19" W
075	**Construction Equipment Repair** Storm water associated with industrial activity	Intermittent Stream (4/29/1994 Paul Herman Memo) – 0.01 mi^2 drainage area 3/15/2011 planning statement	38° 31' 45" N 77° 25' 38" W
086	**Russell Road Landfill** Storm water discharge from collection basin #1	Intermittent Stream – 21.8 mi^2 drainage area 3/15/2011 planning statement	38° 31' 31" N 77° 22' 23" W
090	**Russell Road Landfill** Storm water discharge from collection basin #6	Intermittent Stream – 0.22 mi^2 drainage area 3/15/2011 planning statement	38° 31' 30" N 77° 22' 06" W
091	**Jet Engine Test Pads** Storm water associated with industrial activity	Tidal Potomac	38° 30' 13" N 77° 18' 03" W

Outfalls 009, 072, 721, 073, 074, 075, and 090 all have drainage areas less than 5 mi^2 and it is staff's best professional judgment that drainage areas with such small drainage areas have critical flows of 0.0 MGD.

Outfall 003 has a drainage area of 22.5 mi^2, but site inspections have confirmed that the stream at the outfall location is marshy with very slow flowing water. Mixing zones cannot easily be determined in such waters, so it is staff's best professional judgment that dilution factors be used to determine any necessary wasteload allocations.

Outfall 086 has a drainage area of 21.8 mi^2. The discharge from this outfall results from stormwater runoff from the closed Russell Road landfill. Storm water discharges are considered intermittent and infrequent and the only concern would be acute water quality impacts. The duration of a discharge is not expected to occur for four or more consecutive days. Therefore, only the acute wasteload allocations (WLA_a) need to be addressed. Water Quality Criteria for human health (and chronic toxicity to a lesser degree) are based upon long term, continuous exposure to pollutants from effluents, and storm water discharges are short term and intermittent. It is believed that the human health and chronic criteria are not applicable to storm water discharges. If it is raining a sufficient amount to generate a discharge of storm water, it is assumed that the receiving stream flow will be greater than the critical flow

due to storm water runoff within the stream's drainage area. In recognition of the dilution caused by the rainfall, the WLA_a was calculated by multiplying the acute Water Quality Criteria by 2 for effluent dominated streams.

To: James A. O[redacted]@WDBRG@DEQ
From: Paul E. Herman@WQA@DEQ
Cc:
Subject: Quantico Industrial - VA0002151
Attachment:
Date: 11/20/00 3:30 PM

James,

I have reviewed the flow frequency request submitted for the subject VPDES permit. Assuming there have been no changes to the outfall locations provided in the earlier request from Jennie Dollard dated 4-19-94, and assuming there have been no new outfalls installed, pleasecontinue to use the flow data provided for this facility in my memo to Jennie Dollard dated 4-29-94. In a nutshell, all of the outfalls are to either tidal streams, tidal swamps,or intermittent streams. For the 2 outfalls on perennial streams, 002 and 004 on Beaverdam Creek, please continue to use the flow data provided in my earlier memo.

Please contact me if you have any questions or if there is a need to revise the current flow frequency request form to address new or different outfalls.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Northern Virginia Regional Office

13901 Crown Court Woodbridge, Virginia 22193 (703) 583-3840

Subject: FLOW FREQUENCY REQUEST FORM

To: Paul E. Herman, OWPS-WQAP

From: Jim Olson, NVRO

Date: November 13, 2000

Facility Name: Quantico Industrial

Permit Number: VPDES Permit No. VA0002151

Permit Type : Major Industrial

Permit Action: Reissuance

Flow Frequencies Needed: 1Q10 7Q10 30Q5 High 7Q10 Harmonic Mean

Outfall Description:

Current Reference Gaging Station (if available):

Comments: Enclosed is a copy of the previous analysis. I have been given this to reissue and discovered that the previous permit writer did not request the flow frequencies. Thanks for the help!

Enclosure: Copy from the Quantico Quad topo map.

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE - WATER DIVISION

1519 Davis Ford Road, Suite 14 Woodbridge, Virginia 22192

SUBJECT: Flow Frequency Determination - VPDES Permit No. VA0002151

TO: Paul Herman, OWRM-WQAP

FROM: Jennie Dollard, NVRO

DATE: May 6, 1994

COPIES:

As per our discussion today, the receiving stream classifications for Outfalls 006, 010, 013, 014, 016, 017, 018, 019, 022, 030, 031, 035, 060, 066, and 067 as listed in your April 29, 1994 memo should be modified.

Outfalls 066 and 067 discharge to a free-flowing (Class III) intermittent stream. The area near the discharge has been observed during several site visits and technical inspections. These discharges and the receiving stream at these locations are not influenced by tidal action.

In my April 19, 1994 memo, I'd listed the remaining outfalls as discharging to unnamed tributaries of the Potomac River. This was not correct. These outfalls discharge to tidal swamps, river embayments or are shore-based and located above the high tide elevation. The shore-based outfalls discharge overland for short distances (less than ten feet) before reaching the tidal Potomac.

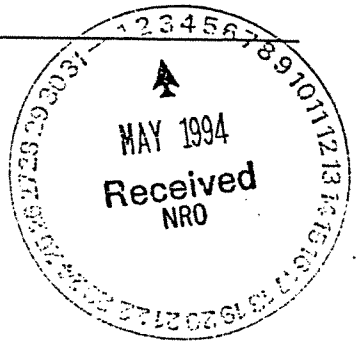
Outfalls 014, 016, and 035 should be identified as discharging to a tidal swamp. Your July 2, 1991 memo identified Outfalls 016 and 035 as discharging to a tidal swamp. Outfall 014 is located within fifty yards of Outfall 035.

Outfalls 006, 010, 013, 017, 018, 019, 022, 030, 031 and 060 should be identified as discharging to the tidal Potomac. The previous flow frequency determination identified Outfalls 017, 030 and 060 as discharging to the tidal Potomac. Outfalls 006, 013, 018, and 022 are adjacent to Outfall 030 and should also be identified as discharging to the tidal Potomac. Outfalls 010 and 031 discharge to the Quantico Bight (tidal Potomac) in the same area as the Mainside STP outfall. Outfall 019 should also be identified as discharging to the tidal Potomac based on site observations.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
U.S. Marine Corps, Quantico - #VA0002151



TO: Jennie Dollard, NRO

FROM: Paul Herman, OWRM-WQAP

DATE: April 29, 1994

COPIES: Ron Gregory, Charles Martin, Dale Phillips, Curt Wells, File

The U.S Marine Corps Quantico Marine Base discharges via 33 outfalls to tributaries of and directly to the Potomac River around Quantico, VA. Stream flow frequencies are required at these outfalls by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

Many of the outfalls discharge to dry ditches, intermittent streams, swamps, or tidal estuary. The following outfalls discharge to intermittent streams: 001, 005, 006, 010, 012, 013, 014, 016, 017, 018, 019, 022, 030, 031, 035, 060, 071, 072, 073, 074, and 075. The outfalls which discharge to tidal or freshwater swamps are as follows: 003, 009, 027, 066, and 067. One outfall, 040, discharges to a dry ditch or passes overland. The flow frequencies for intermittent streams, dry ditches or overland, and tidal or freshwater swamps are 0.0 cfs for 1Q10, 7Q10, 30Q5, and high flow 7Q10 while the harmonic mean is undefined.

For outfalls which discharge to the mouth of tidal creeks or the Potomac estuary, flow frequencies may be based on the freshwater inflow to the Potomac as measured by the gage on the Potomac River near Washington D.C. #01646500. The outfalls falling under this description are 008, 015, 032, and 050. The freshwater flow frequencies are listed below.

Potomac River near Washington D.C. #01646500

Drainage Area =	11,560 mi^2
1Q10 =	542 cfs
7Q10 =	639 cfs
30Q5 =	1,096 cfs
High Flow 7Q10 =	2,273 cfs
HM =	3,823 cfs

The high flow months are January through May.

Two outfalls, 002 and 004, discharge to the Beaverdam Run near Garrisonville, VA. Flow frequencies for Beaverdam Run were determined using a discontinued USGS gage that was located on Beaverdam Run approximately 0.25 miles downstream from the discharge points. The USGS operated the gage from 1951 to 1957. The measurements made by the USGS correlated very well with the same day daily mean values from the continuous record gage on the South Fork Quantico Creek near Garrisonville, VA #01658500. The measurements and daily mean values were plotted by the USGS on a logarithmic graph and a best fit line was drawn through the data points. The required flow frequencies from the reference gage were plotted on the regression line and the associated flow frequencies at the measurement site were determined from the graph.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gage, the measurement site and the discharge point are presented below:

S.F. Quantico Creek near Garrisonville, VA (#01658500):

Drainage Area = 7.64 mi^2
1Q10 = 0.0 cfs
7Q10 = 0.0 cfs
30Q5 = 0.05 cfs
High Flow 7Q10 = 0.64 cfs
HM = undefined

Beaverdam Run near Garrisonville, VA (#01660500):

Drainage Area = 12.7 mi^2
1Q10 = 0.0 cfs
7Q10 = 0.0 cfs
30Q5 = 0.38 cfs
High Flow 7Q10 = 1.9 cfs
HM = undefined

Beaverdam Run at Outfalls 002 and 004:

Drainage Area = 12.5 mi^2
1Q10 = 0.0 cfs
7Q10 = 0.0 cfs
30Q5 = 0.37 cfs
High Flow 7Q10 = 1.87 cfs (December-May)
HM = undefined

This analysis assumes there are no significant discharges, withdrawals or springs influencing the flow in Beaverdam Run upstream of the discharge point.

If there are any questions concerning this analysis, please let me know.

To: Alison Thompson
From: Jennifer Carlson

Date: March 15, 2011
Subject: Planning Statement for Quantico Industrial
Permit No: VA0002151

Discharge Type: Industrial process water and stormwater
Discharge Flow: See Attached Table for Outfalls

Receiving Stream: See Attached Table for Outfalls
Latitude / Longitude: See Attached Table for Outfalls

1. Is there monitoring data for the receiving stream?

No - Outfalls 072, 074 and 075 discharge into unnamed tributaries to Smith Lake (Aquia Reservoir). The unnamed tributaries do not have any monitoring data.

No – Outfall 073 discharge into an unnamed tributary to Beaverdam Run, the unnamed tributary does not have any monitoring data.

Yes - Outfalls 003 and 086 discharge into a riverine segment of Chopawamsic Creek which has been assessed for water quality using data collected by USGS at their gage station. The closest DEQ monitoring station is located downstream in an estuarine segment of Chopawamsic Creek

No - Outfall 090 discharges into an unnamed tributary to Chopawamsic Creek. This unnamed tributary has not been monitored, but there is a downstream DEQ monitoring station located downstream in an estuarine segment of Chopawamsic Creek.

Yes - Outfall 009 discharges into an estuarine segment of Chopawamsic Creek which has been monitored.

Yes - Outfalls 007, 010, 014, 016, 035 and 091 discharge to a Virginia portion of the Potomac River, was has been monitored and assessed.

Yes - Outfalls 018, 019, and 030 discharge to a Maryland portion of the Potomac River.

- If yes, please attach latest summary.

Outfalls 003 and 086 discharge into a 0.81 mile long segment of Chopawamsic Creek, that was assessed by data collected at USGS gage station 01660110. The following is the summary for this segment as taken from the 2010 Integrated Report:

Class III, Section 5a, special stds. b.

USGS station 01660110.

Ambient monitoring finds a pH impairment. resulting in an impaired classification for the aquatic life use. The wildlife use is considered fully supporting. The fish consumption and recreation uses were not assessed.

Outfall 009 discharges into a portion of the Chopawamic Creek embayment. The closest downstream monitoring station is station 1aCHO000.47 which is located approximately 0.5 miles from Outfall 009. The following is the summary of this segment of Chopawamsic Creek as taken from the 2010 Integrated Report:

Class II, Section 5. special stds. b.

DEQ fish tissue/sediment monitoring station 1aCHO000.90 and ambient water quality monitoring stations 1aCHO000.47 and 1aCHO001.57.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control. PCB fish consumption advisory and fish tissue monitoring. SPMD data revealed an exceedance of the human health criteria of 0.64 parts per billion (ppb) polychlorinated biphenyls (PCBs). which is noted by an observed effect. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

Additionally, excursions above the water quality criterion based tissue value (TV) of 120 parts per billion (ppb) for DDE and 120 ppb for DDT in fish tissue was recorded in one specie of fish (2 total samples) collected in 2008 at monitoring station 1aCHO000.90 (American eel). each noted by an observed effect.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. The wildlife use is considered fully supporting.

The recreation use was not assessed.

Outfalls 007, 010, 014, 016, 035 and 091 discharge to a Virginia portion of the Potomac River consisting of the tidal waters of the Potomac River embayment surrounding Chopawamsic Island. DEQ has an ambient water quality station, 1aPOT080.29, located in this segment. The following is the summary for this segment as taken from the 2010 Integrated Report:

Class II. Section 5, special stds. b.

DEQ ambient water quality monitoring station 1aPOT080.29, at Quantico Bite.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. Additionally, results from an SPMD deployment indicated that water concentrations for total PCBs exceeded the human health criterion of 0.00064 ug/L, noted by an observed effect. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed.

The recreation and wildlife uses were not assessed.

Outfalls 018, 019, and 030 discharge to the oligohaline portion of the Potomac River, which is under Maryland jurisdiction.

- If no, where is the nearest downstream monitoring station.

Outfalls 072, 074 and 075 discharge into an unnamed tributary to Smith Lake (Aquia Reservoir). Outfall 073 discharges into an unnamed tributary to Beaverdam Run. The nearest downstream monitoring station from all the Outfalls is 1aBED000.19, which is located in Smith Lake approximately 3 to 4 miles downstream of the Outfalls. The following is the summary for this segment of Smith Lake as taken from the 2010 Integrated Report:

Class III, Section 4b, special stds. PWS, b.

DEQ lake ambient monitoring stations 1aAUA012.15, 1aAUA012.55, and 1aBED000.19.

The aquatic life, recreation, and wildlife uses are considered fully supporting. The fish consumption and public water supply uses were not assessed.

Outfall 090 discharges into an unnamed tributary to Chopawamsic Creek. The nearest downstream monitoring station is 1aCHO003.65, located in Chopawamsic Creek estuarine waters. The following is the summary for this portion of Chopawamsic Creek as taken from the 2010 Integrated Report:

Class II, Section 5, special stds. b.

DEQ ambient water quality monitoring station 1aCHO003.65, at Route One.

Note: Although the fecal coliform bacteria criteria are no longer being used for assessment purposes, there has been insufficient enterococci bacteria monitoring along this assessment unit reach. The fecal coliform impairment formerly associated with this assessment unit will remain.

The recreation use is considered not supported, as described above. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. Additionally,

results from water column stream sampling indicated that water concentrations for total PCBs exceeded the human health criterion of 0.00064 ug/L, noted by an observed effect. A PCB TMDL for the tidal Potomac River watershed has been completed and approved.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse: the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. The wildlife use is considered fully supporting.

2. Is the receiving stream on the current 303(d) list?

   A. Yes - Chopawamsic Creek, the receiving stream for Outfalls 003 and 086

   B. Yes – Chopawamsic Creek (estuarine), the receiving segment for Outfall 009

   C. Yes – Potomac River, the receiving segment for Outfalls 007, 010, 014, 016, 035 and 091

   D. No – Unnamed tributary to Smith Lake, receiving stream for Outfalls 072, 074 and 075. (Please see question 3, answer A)

   E. No – Unnamed tributary to Beaverdam Run, receiving stream for Outfall 073. (Please see question 3, answer A)

   F. No – Unnamed tributary to Chopawamsic Creek, receiving stream for Outfall 090. (Please see question 3, answer B)

   G. Yes – Maryland portion of the Potomac River, receiving waterbody for Outfalls 018, 019, and 030

   - If yes, what is the impairment?

   A. Chopawamsic Creek is listed as not supporting the aquatic life use due to exceedances of the pH criterion.

   B. Chopawamsic Creek is listed as not supporting the fish consumption use due to PCBs in fish tissue. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. Additionally,

excursions above the water quality criterion based tissue value (TV) of 20 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in tissue from nine species of fish (largemouth bass, yellow perch, channel catfish, carp, brown bullhead catfish, American eel, white perch, gizzard shad, and bluegill sunfish) sampled in 2008 at monitoring station 1aCHO000.90.

C. The Potomac River is listed as not supporting the fish consumption use due to PCBs in fish tissue. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. While the embayment is not named explicitly in the advisory, a similar advisory concerning PCBs in the Potomac River exists for Maryland.

D. N/A

E. N/A

F. N/A

G. The Oligohaline Potomac River under Maryland jurisdiction is listed with several impairments:

   a. Biological (Benthic)
   b. SAV and Water Clarity (Sediments)
   c. Dissolved Oxygen (Nutrients – Nitrogen and Phosphorous)
   d. PCBs in Fish Tissue

- Has the TMDL been prepared?

A. No - A TMDL has not been prepared from the pH impairment on Chopawamsic Creek

B. Yes – A PCB TMDL for the Potomac River has been prepared.

C. Yes – A PCB TMDL for the Potomac River has been prepared.

D. N/A

E. N/A

F. N/A

G. Yes - A PCB TMDL for the Potomac River has been prepared, as well as the Chesapeake Bay TMDL which addresses the sediment and nutrient loadings.

- If yes, what is the WLA for the discharge?

A. N/A

B. A WLA was not assigned to this facility in the Potomac PCB TMDL.

C. A WLA was not assigned to this facility in the Potomac PCB TMDL.

D. N/A

E. N/A

F. N/A

G. A WLA was not assigned to this facility in the Potomac PCB TMDL. In the Bay TMDL, this Industrial facility did not receive a specific individual WLA since it was classified as a nonsignificant facility but the Oligohaline segment of the Potomac River received a TMDL equation.

- If no, what is the schedule for the TMDL?

A. The pH TMDL for Chopawamsic Creek is scheduled for completion in 2014.

B. The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA.

C. The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA.

D. N/A

E. N/A

F. N/A

G. The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA. The Chesapeake Bay TMDL was completed by EPA on 12/29/2010. The biological impairment on the Potomac has not yet received a TMDL.

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment?

A. Yes – there is a listed impairment downstream of Smith Lake, in Aquia Creek

B. Yes – there is a listed impairment downstream of the unnamed tributary to Chopawamsic Creek, in the upper estuarine portion of Chopwamsic Creek

- If yes, what is the impairment?

A. The estuarine portion of Aquia Creek is listed with two different impairments:
    a. The entire estuarine area of Aquia Creek as listed as not supporting the fish consumption use due to PCBs in fish tissue. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.
    b. A portion of estuarine Aquia Creek is listed as not supporting the recreation use. Sufficient excursions from the maximum enterococcus bacteria criterion (5 of 38 samples - 13.2%) were recorded at DEQ's ambient water quality monitoring station (1aAUA003.71) at the railroad crossing to assess this stream segment as not supporting the recreation use goal for the 2010 water quality assessment.

B. The upper estuarine portion of Chopawamsic Creek is listed with two different impairments:
    a. Fish consumption use due to PCBs in fish tissue. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.
    b. Recreation use due to exceedances of fecal coliform bacteria. Sufficient exceedances of the instantaneous fecal coliform bacteria criterion (4 of 36 samples - 11.1%) were recorded at DEQ's ambient water quality monitoring station (1aCHO003.65) at the Route 1 bridge to assess this stream segment as not supporting of the recreation use goal.

- Has a TMDL been prepared?

A. Aquia Creek impairments downstream of Smith Lake
    a. Yes – a PCB TMDL has been completed
    b. No- a bacteria TMDL has not yet been prepared

B. Chopawamsic Creek impairments
   a. Yes – a PCB TMDL has been completed
   b. No- a bacteria TMDL has not yet been prepared

- Will the TMDL include the receiving stream?

A&B. The receiving stream was not specifically included in the TMDL, but all upstream facilities are taken into consideration during TMDL development.

- Is there a WLA for the discharge?

A&B. This facility did not receive a WLA in the PCB TMDL nor is it expected to receive a WLA in the Bacteria TMDL

- What is the schedule for the TMDL?

A. Aquia Creek impairments downstream of Smith Lake
   a. The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA.
   b. The Bacteria TMDL is scheduled to be completed by 2020.

B. Chopawamsic Creek impairments
   a. The Potomac PCB TMDL was completed and approved on 10/31/2007 by EPA.
   b. Bacteria TMDL is scheduled to be completed by 2016.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   The tidal Potomac River is listed with a PCB impairment. The Assessment/TMDL Staff has concluded that low-level PCB monitoring is not warranted for this facility, based upon the assigned Standard Industrial Classification code. Based upon this information, this facility is not expected to be a source of PCBs and will not be requested to monitor for low-level PCBs.

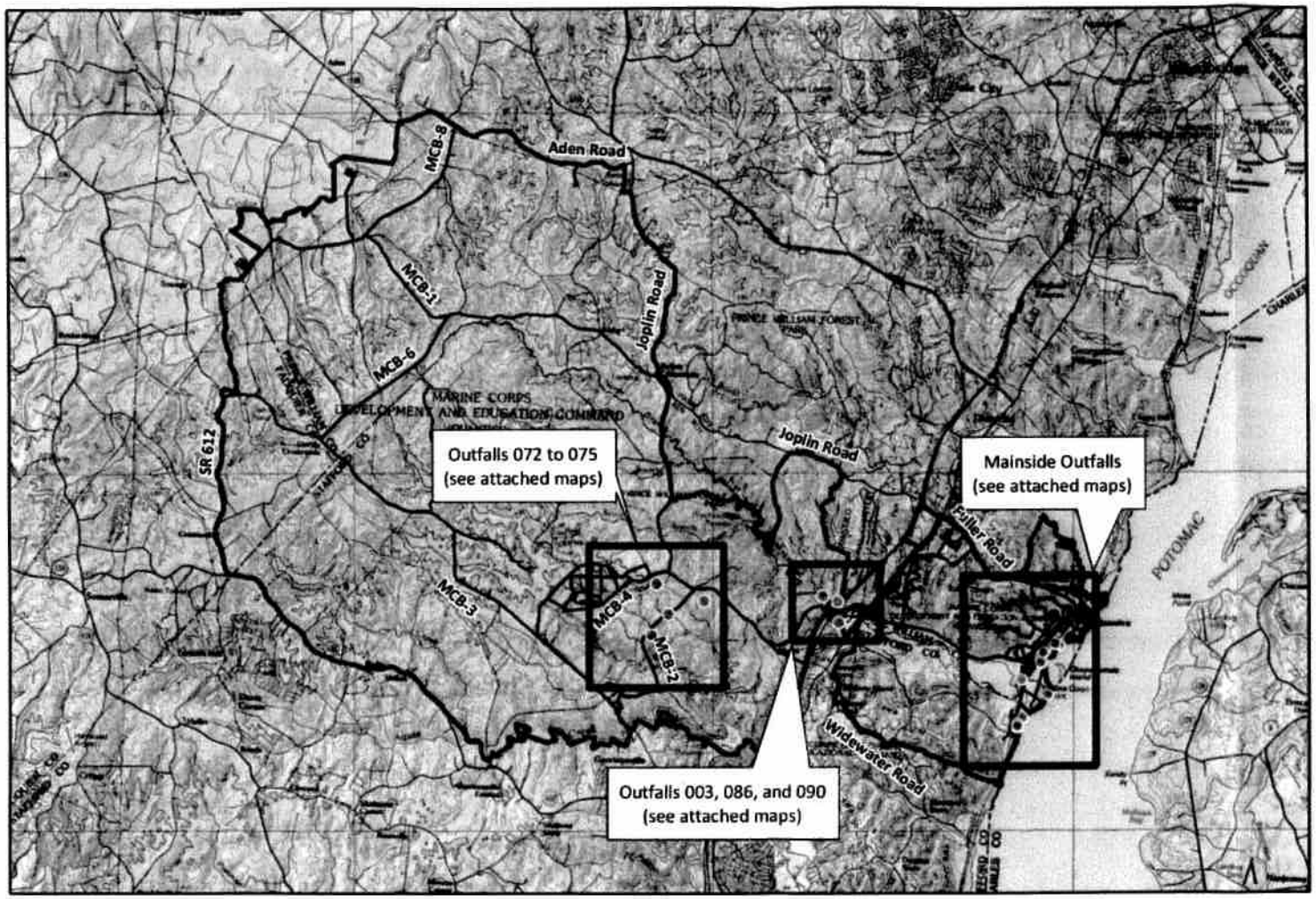
5. Fact Sheet Requirements – Please provide information on other individual VPDES permits or VA DEQ monitoring stations located within a 2 mile radius of the facility. In addition, please provide information on any drinking water intakes located within a 5 mile radius of the facility.

   There are 4 public water supply intakes located within a 5 mile radius of the outfalls – Lunga Reservoir, Smith Lake, Breckinridge Reservoir, and Gray Reservoir. There are 2 other VDPES permits - VA0028363 and VA0002071 - and 10 DEQ monitoring stations - 1aBED002.97, 1aSOB001.80, 1aMIP000.40, 1aCHO003.65, 1aCHO003.47, 1aCHO001.57, 1aCHO000.47, 1aQUA000.43, 1aLIE000.52, and 1aPOT080.29 - located within a collective 2 mile radius around the outfalls.

VA0002151 - Outfall Information

Outfall Number	Discharge Source	Receiving Stream	Latitude/Longitude	Waterbody	Water Quality Standards	Drainage Area (mi^2)
003	**Mainside WTP** Filter backwash, Stormwater	Chopawamsic Creek	38° 31'09" N 077° 22' 08" W	VAN-A26R PL53	Class III, Section 5a, special stds. b.	22.5
007	**Mainside STP** Stormwater	Potomac River (VA)	38° 30'54" N 077° 17' 55" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A
009	**NCO Swimming Pool** Swimming pool filter backwash (May - Sept), Stormwater	Chopawamsic Creek	38° 30' 21" N 077° 18' 30" W	VAN-A26E PL53	Class II, Section 5, special stds. b.	0.05
010	**Mainside Drainage - North** NCCW (May – Sept), Stormwater	Potomac River (VA)	38° 30' 54" N 077° 17' 46" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A
014	**HMX-1 Hangars & Maintenance -** Steam condensate & storm-water runoff	Potomac River (VA)	38° 30' 36" N 077° 18' 11" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A
016	**Southern Mainside Drainage -** NCCW, Stormwater runoff	Potomac River (VA)	38° 30' 47" N 077° 18' 11" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A
018	**HMX-1 Supply Depot** Storm water associated with industrial activity	Potomac River (MD)	38° 29' 39" N 077° 18' 39" W	VAN-A26E PL54	MD waters	N/A
019	**Aero Club -** Storm water associated with Industrial activity	Potomac River (MD)	38° 30' 07" N 077° 18' 07" W	VAN-A26E PL54	MD waters	N/A
030	**BoBo Hall** Stormwater	Potomac River (MD)	38° 29' 46" N 077° 18' 33" W	VAN-A26E PL54	MD waters	N/A
035	**BOQ** Stormwater	Potomac River (VA)	38° 30' 43" N 077° 18' 11" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A
072 / 0721	**Fuel Farm** Storm water from the tank diked area and hydrostatic tank test waters.	Smith Lake, UT	38° 31' 26" N 077° 24' 40" W	VAN-A27R PL55	Class III, Section 4b, special stds. PWS, b.	0.004
073	**Landfill** Storm water associated with industrial activity	Beaverdam Run, UT	38° 31' 21" N 077° 25' 31" W	VAN-A27R PL55	Class III, Section 4b, special stds. PWS, b.	0.008

Outfall Number	Discharge Source	Receiving Stream	Latitude/Longitude	Waterbody	Water Quality Standards	Drainage Area (mi^2)
074	**Landfill** Storm water associated with industrial activity	Smith Lake, UT	38° 31' 23" N 077° 25' 19" W	VAN-A27R PL55	Class III, Section 4b, special stds. PWS, b.	0.02
075	**Construction Equipment Repair** Storm water associated with industrial activity	Smith Lake, UT	38° 31' 45" N 077° 25' 38" W	VAN-A27R PL55	Class III, Section 4b, special stds. PWS, b.	0.01
086	**Russell Road Landfill** Storm water discharge from collection basin #1	Chopawamsic Creek	38° 31' 31" N 077° 22' 23" W	VAN-A26R PL53	Class III, Section 5a, special stds. b.	21.8
090	**Russell Road Landfill** Storm water discharge from collection basin #6	Chopawamsic Creek, UT	38° 31' 30" N 077° 22' 06" W	VAN-A26R PL53	Class III, Section 5a, special stds. b.	0.22
091	**Jet Engine Test Pads** Storm water associated with industrial activity	Potomac River (VA)	38° 30' 13" N 077° 18' 03" W	VAN-A26E PL54	Class II, Section 5, special stds. b.	N/A



Source: USGS Topographic Maps.
USGS Quads: 7.5 minute series
Independent Hill
Joplin
Stafford
Quantico
Somerville
Nokesville
Widewater

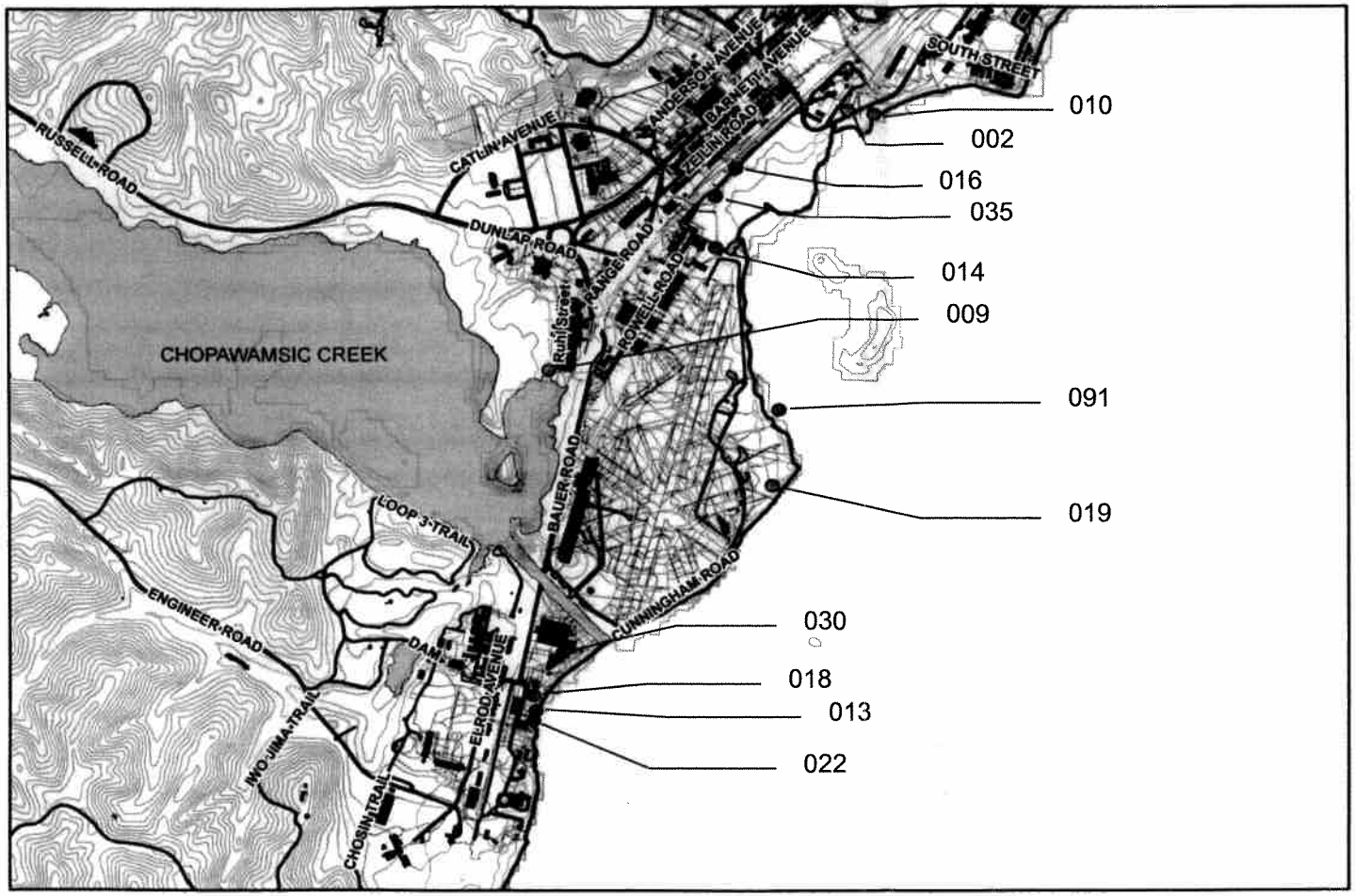
Attachment 4

OUTFALL LOCATION MAP

VPDES Permit Renewal 2010

Marine Corp Base Quantico, Virginia

Figure 1-XI-2



N
W E
S

Outfall 010:	Lat-38.30.21 Long-77.17.46
Outfall 002:	Lat-38.30.54 Long-77.17.55
Outfall 016:	Lat-38.30.47 Long-77.18.11
Outfall 035:	Lat-38.30.31 Long-77.18.00
Outfall 014:	Lat-38.30.36 Long-77.18.11
Outfall 009:	Lat-38.30.21 Long-77.18.30
Outfall 091:	Lat-38.30.13 Long-77.18.03
Outfall 019:	Lat-38.30.07 Long-77.18.07
Outfall 030:	Lat-38.30.40 Long-77.18.05
Outfall 018:	Lat-38.29...39 Long-77.18.39
Outfall 013:	Lat-38.29.38 Long-77.18.39
Outfall 022:	Lat-38.29.38 Long-77.18.39

Legend

- Potomac River Bank
- Storm Sewer Line
- 10ft Contours USGS
- Stucture Area
- VPDES Outfalls

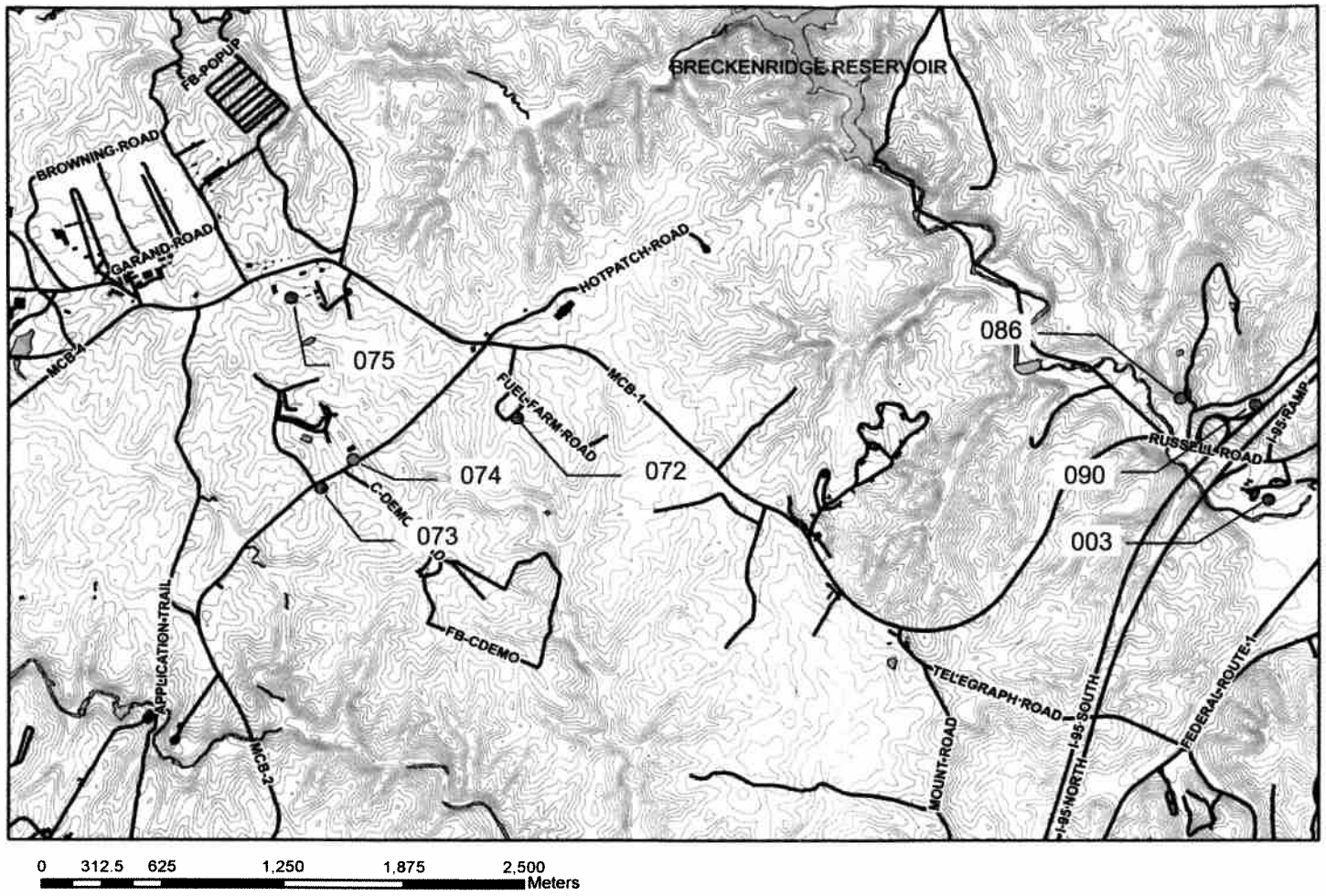
Source: Quantico GIS, 2004.

MAINSIDE VPDES OUTFALLS

VPDES Permit Renewal 2010

Marine Corp Base Quantico, Virginia

Figure 1-XI-3



N
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S

Outfall 075: Lat-38.31.45 Long-77.25.40
Outfall 074: Lat-38.31.23 Long-77.25.19
Outfall 073: Lat-38.31.16 Long-77.24.26
Outfall 072: Lat-38.31.26 Long-77.24.40
Outfall 086: Lat-38.31.31 Long-77.22.23
Outfall 090: Lat-38.31.30 Long-77.22.06
Outfall 003: Lat-38.31.09 Long-77.22.08

Legend

- 10ft Contours USGS
- Road Areas
- Storm Sewer Line
- Stucture Area
- VPDES Outfalls

Source: Quantico GIS, 2004.

WESTERN QUANTICO VPDES OUTFALLS

VPDES Permit Renewal 2010

Marine Corp Base Quantico, Virginia

Figure 1-XI-4

Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material
27263	Fuel Farm					Fuels (JP-8, #2 and #6 Fuel Oil, Diesel, Gasoline)
TR5161	Airfield Refueling					Fuels (JP-8)
2080	Auto Hobby Shop/Shed (New Location)	X	X	X	X	Used Antifreeze, Used Oil, Used Oil Filters, Used Speed Dry, Batteries, Blast Media
25	Marina	X				Sewage (Boat Unloading), Gasoline
3230/3230A	MCSC - Recon & Amphibous Test Center	X		X		Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Used Fuels, Diesel Fuel
3185/3185A	Communication Officers School/Shed	X			X	Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Lithium Batteries, Diesel Fuel
27001/27002	Guad Maintenance Areas/Sheds	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Diesel Fuel
27002	Guad Maintenance Shed	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze
27054	Construction Equipment Repair (CER)	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Oil, Used Oil Filters
24018	TBS Armory	X				Paint, stripping paint, Petroleum distillate gold solvent
24101	TBS Maintenance	X				Fuels (Oil, Diesel, Gasoline), paints, carpentry adhesives and sealants
24009	TBS Track Vehicle and Motor T Maintenance	X			X	Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Used Batteries, Diesel Fuel
1303/1314	Water Treatment Plant					Alum, Lime, Soda Ash, Sodium Bicarbonate, Sodium Fluorosilicate, Sodium Hexametaphosphate, Sodium Sulfite, Diesel Fuel
2101/2102/2102A/2103/2104/2105	HMX-1		X	X		Used Fuel, Used Paint and Paint Filters, Diesel Fuel, Paints, Adhesives, Degreasers, Solvents
3306/3063/3066	Golf Course	X		X		Pesticides, Herbicides, Fertilizer, Used Oil Filters, Diesel Fuel, Gasoline

Revision_____ Date_____

Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material
28000	Engineer Support Area (TDSA)	X				Oils, Greases, Gasoline, Diesel
2112	HMX-1 GSE Shed	X				Oil, Greases, Used Fuel, Used Antifreeze, Diesel Fuel
2013/2013A	Motor Transport Maintenance/Shed	X		X	X	Oils, Greases, Batteries, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Fuels, Used Paint Solvent, Used Oil Filters, Used Antifreeze
2013A	Motor Transport Maintenance Shed	X			X	Used Oil, Used Antifreeze, Batteries
27241A	Weapons Training Battalion	X				Oils, Greases, Paint, Degreasers, Solvents
27212	Weapons Training Battalion	X				Fuels (Oil, Diesel, Gasoline)
New Building	Weapons Training Battalion			X		CLP, Muriatic Acid, Used Solvent Filters, Used NaOH, Used Paint, Used Blasting Media
3252	Facilities Maintenance	X		X		Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Refrigerants, Paint Gun Waste, Used Oil, Mixed Gasoline/Oil
26145A	LAI Motor Pool (Upshur) Shed	X				Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze, Used Oil, Used Antifreeze
24141/24142	TBS Motor Maintenance	X				Oils, Greases, Paint, Degreasers, Solvents, Antifreeze, Diesel Fuel, Gasoline
3016/2056	Motor Pool Transport Wash Rack/Fueling					Diesel Fuel, Gasoline, Pressure Washer Fluid (Containing Sodium Hydroxide and Versalene 100)
2121	HMX-1 Supply Warehouse					Oils, Greases, Paint, Degreasers, Solvents, Brake Fluid, Antifreeze
27401	Hazardous Waste Storage Building		X			Varies with the operational requirements of the activities conducted on Base

Notes:

1. A Risk Assessment was complete for potential storm water pollutant industrial sources. Facilities are arranged in high to low risk levels.

Table B-4
Significant Hazardous Materials Inventory

Building Number	Facility	Outside Hazardous Material Storage	90 Day	SAA	Universal	Significant Material

2. MCB Quantico is an EPRCA reporting facility. Eleven EPCRA 313 chemicals exceeded the thresholds for reporting year 2004. These include Copper, Benzene, Cumene, Cyclohexane, Ethylbenzene, Hexane, Lead Compounds, Methyl Tertiary Butyl Ether, Nitrate Compounds, Toluene, 1,2,4-Trimethylbenzene, and Xylene.

Table B-8
Outfall Summary

VPDES Outfall	MCCDC Outfall	Outfall Location	Area of Impervious Surface (Acres)	Total Area Drained (Acres)	Size	Type of Discharge	Significant Materials Exposed to Storm Water	Sampling Requirements	Sampling Frequency	Treatment	Outfall Maintenance	Receiving Water	Outfall GPS Coordinates
003	CC-15	Mainside WTP			10" Steel	Filter Backwash, GW, SW	Filter Backwash	Flow, pH, TSS, TRC	Once per month	Sedimentation (1 Lagoon)		Chopawamsic Creek	E293630.640 N4266093.220
009	CC-1	NCO Swimming Pool			24" Concrete	Swimming Pool Filter Backwash, SW	Chlorine	Flow, pH, TRC	Once per month during the months of May - September	Dechlorination	Keep path clear to outfall	UT to Chopawamsic Creek	E298630.638 N4264483.352
010	PR-40	Mainside Drainage North	70.5	220	60" RCP	Steam condensate, NCCW, SW	Herbicides, pesticides	Flow, pH, Temp, Annual Bioassay	Once per month, bioassay is once per year but requires 3 days to sample	None	Weedwhack path to outfall	UT to Potomac River	E299670.052 N4265438.850
013	PR-17	Old location of the MWR Hobby Shop	3.6	18	24" to 29" RCP box culvert	Steam condensate, SW	Oil, antifreeze	Flow, pH, Temp	Once per month	None	May require removal of debris (driftwood, etc) from mouth of outfall	UT to Potomac River	E298491.155 N4263177.723
014	AF-14	HMX-1 Hangars & Maintenance	24.5	27.5	36" RCP	Steam condensate, NCCW, SW	AFFF, deicing materials, oil	Flow, pH, Temp	Once per month	None	None	UT to Potomac River	E299165.755 N4264937.972
016	PR-37	Mainside Drainage South	132	440	60" CMP	Steam condensate, SW	Fuels, oils	Flow, pH, TSS, TPH, Quarterly Bioassay	Once per month	OWS (2)	Weedwhack path to outfall	UT to Potomac River	E299216.803 N4265224.217
018	PR-22	HMX-1 Supply Depot	0.6	0.6	18" RCP	SW	Paints, paint thinners, oil, antifreeze, phenolic stripper			None		UT to Potomac River	E298487.743 N4263238.706
019	AF-11	Aero Club	5	13.8	21" RCP	SW	Fuels, oil	Flow, pH, BOD, TSS, COD, TPH	Once per year	None	Weedwhack path to outfall	UT to Potomac River	E299351.646 N4264039.187
022	Old Location was PR-16, now draining through to OF-16	MWR Auto Hobby Lot	1.3	1.3	24" RCP	SW	Auto Hobby is no longer located at this site. No industrial activity noted.	Flow, pH, Temp, TSS, COD, TPH	Once per year	None	Keep bushes trimmed around top of outfall	UT to Potomac River	E298490.679 N4263150.641

Table B-8
Outfall Summary

VPDES Outfall	MCCDC Outfall	Outfall Location	Area of Impervious Surface (Acres)	Total Area Drained (Acres)	Size	Type of Discharge	Significant Materials Exposed to Storm Water	Sampling Requirements	Sampling Frequency	Treatment	Outfall Maintenance	Receiving Water	Outfall GPS Coordinates
030	PR-29	Bobo Hall			21" Steel	Refrigeration Unit Condensate, Floor Wash, SW		Flow, pH, TSS, O&G	Quarterly	None	Debris cleanup around outfall, keep mouth of outfall from getting overgrown	Potomac River	E298623.342 N4263426.313
035	AF-17	BOQ			54" Concrete	NCCW, SW		Flow, pH, Temp, TSS, Annual Bioassay	Once per month, bioassay is once per year but requires 3 days to sample	None	Weedwhack path to outfall	UT to Potomac River	E299149.044 N4265122.702
072	RR-24	Fuel Farm	0.5	2.5	18" RCP	Hydrostatic tank test waters, SW	Fuels	Flow, pH, TPH, TOC	Quarterly	OWS	None	UT to Beaverdam Run	E289684.225 N4266629.164
073	RR-26	Landfill Pond	0	16.5	Overland Flow	SW	Solid Waste from MCCDC	Flow, pH, TSS	Once per year	Sedimentation	Weedwhack path to outfall	UT to Beaverdam Run	E288660.116 N4266500.734
074	RR-27	Landfill Marsh	0	16.5	Open Channel	SW	Solid Waste from MCCDC	Flow, pH, TSS	Once per year	Sedimentation	Weedwhack path to outfall	UT to Beaverdam Run	E288706.509 N4266719.576
075	RR-14	Construction Equipment Repair	0.04	4.8	24" CMP	SW	Oil, antifreeze, fuels			None		UT to Beaverdam Run	E288540.192 N4267321.378
086		Russell Road Landfill	0	40		SW - Basin #1	Sediment	Flow, pH, TSS	Quarterly	Sedimentation	Weedwhack path to outfall	UT to Chopawamsic Creek	E293135.365 N4266756.078
090		Russell Road Landfill	0	80		SW - Basin #6	Sediment	Flow, pH, TSS	Quarterly	Sedimentation	Weedwhack path to outfall	UT to Chopawamsic Creek	E293536.220 N4266729.037
091		Jet Engine Test Pad	0.27	0.27		SW	Fuels, oils	Flow, pH, Temp, TPH	Once per year	None	None	UT to Potomac River	Exact location unknown, restricted access

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Preston Bryant
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

February 9, 2009

Mr. Bruce Frizzell
Head, Natural Resources and Environmental Affairs Branch, B046
Quantico Marine Corps Base
3250 Catlin Avenue
Quantico, VA 22134–5001

RE: Quantico Industrial – VA0002151

Dear Mr. Frizzell:

Attached is a copy of the site inspection report generated while conducting a Facility Technical Inspection at the United Stated Marine Corps Base (MCB Quantico) NREAB Industrial Facility on January 9, 2009. The compliance staff would like to thank Ms. Patty Greek and Ms. Donna Heric for their time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed. The laboratory inspection had **Deficiencies** for the Laboratory Equipment and Total Residual Chlorine (TRC). Please note the requirements and recommendations addressed in the technical summary. Please submit in writing a progress report to this office by **March 11, 2009** for the items addressed in the summary. Your response may be sent either via the US Postal Service or electronically, via E-mail. If you chose to send your response electronically, we recommend sending it as an Acrobat PDF or in a Word-compatible, write-protected format.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3909 or by E-mail at wgharback@deq.virginia.gov.

Sincerely,

Wilamena Harback

Wilamena Harback
Environmental Specialist II

cc: Permit/DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
OWCP – Steve Stell
Quantico NREAB - Sally Meckle, Patty Greek and Donna Heric (via email)

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0002151	**May 23, 2006**		**May 22, 2011**

Facility Name	Address	Telephone Number
Quantico Marine Base Industrial	**60,600 Acres in eastern Prince William, Stafford and Fauquier Counties**	**703-784-4030**
Owner Name	Address	Telephone Number
U.S. Marine Corps **Quantico Marine Corps Base**	**Natural Resources and Environmental Affairs** **3250 Catlin Avenue** **Quantico, VA**	**703-784-4030**
Responsible Official	Title	Telephone Number
Bruce C. Frizzell	**Head, Natural Resources**	**703-784-4030**
Responsible Operator	Operator Cert. Class/Number	Telephone Number
Sally L. Meckle	N/A	**703-432-1335**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Federal	**X**	Major	**X**
Non-federal		Minor		Non-federal		Minor	

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 003**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**		**30**	**60**
pH (SU)	**6.0**		**9.0**	**CL_2 (mg/L)**		**0.038**	**0.038**
	Receiving Stream			**Chopawamsic Creek**			
	Basin			**Potomac River**			
	Discharge Point (LAT)			**38° 31' 09"**			
	Discharge Point (LONG)			**77° 22' 08"**			

Outfall 003 – Mainside WTP

The Water Treatment Plant (WTP) no longer discharges to this lagoon on a regular basis; the discharge has been diverted to the sanitary sewer.

Observations:

- **No flow present at the time of inspection. Ms. Greek stated that the lagoon is no longer discharged into by the water treatment plant.**
- **Dechlorination unit in place, tablets present.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 009**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**CL_2 (mg/L)**		**0.038**	**0.038**
pH (SU)	**6.0**		**9.0**				
	Receiving Stream			**Chopawamsic Creek**			
	Basin			**Potomac River**			
	Discharge Point (LAT)			**38° 30' 21"**			
	Discharge Point (LONG)			**77° 18' 30"**			

Outfall 009 – NCO Swimming Pool

This discharge receives some pool overflow, floor drains in the filter building and small amount of road drainage. The pool is drained through this outfall at the beginning of September.

Observations:

- **The NCO Swimming Pool was out of service (and drained) at the time of inspection. Minnows and other smaller water-life were present just downstream of the discharge point.**
- **The dechlorination tablet feeder was clean but without tables because the pool was out of service.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 010**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Temperature (°C)**			**32.0**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 30′ 54″**
Discharge Point (LONG)	**77° 17′ 46″**

Outfall 010 – Mainside Drainage (North)

The outfall is located near the Potomac River, just below the Mainside WWTP. Sampling is conducted at a manhole upstream of the outfall pipe since the actual discharge point is typically submerged.

Observations:

- **At the previous inspection (09-16-06) the path to the sampling point was in need of mowing. This item was rectified and there was a clear path to the outfall by following the fence line at the Mainside WWTP.**
- **A small flow was present at the bottom of the manhole.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 013**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Temperature (°C)**			**32.0**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 29′ 38″**
Discharge Point (LONG)	**77° 18′ 39″**

Outfall 013 – Vehicle Hobby Shop

Discharge source is storm water from the parking lot area adjacent to the vehicle hobby shop and building roof drains.

Observations:

- **This outfall is usually submerged due to the tidal influence in the area. At the time of the inspection the outfall was visible and not discharging.**
- **Shop activities and stored vehicles have been relocated. The facility is investigating the potential to remove this outfall during the next permit renewal.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 014**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Temperature (°C)**			**32.0**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**UT to Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 30′ 36″**
Discharge Point (LONG)	**77° 18′ 11″**

Outfall 014 – HMX-1 Hanger and Maintenance Area

Sources include storm water flow from hanger roof drains and adjacent airfield and maintenance area runoff. Sampling occurs at a manhole on the airfield next to a hanger. Aircraft wash racks are connected to this discharge but are valved in order to divert flow to the Mainside WWTP during aircraft washing. Storm water runoff can be diverted to this Outfall during extremely heavy periods of rain.

Observations:

- **Access to this area was not possible at the time of inspection due to the security issues.**
- **At the previous inspection (09-16-06) the following items were noted: (1) Booms still in place from spill containment that needed to be removed and (2) Access to the actual outfall is not possible due to brush overgrowth. Ms. Heric did state that these items had been corrected shortly after the previous inspection.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 016**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**	**Total Petroleum Hydrocarbons**			**NL**
Temperature (°C)			**32.0**				

Receiving Stream	**UT of Potomac River**	
Basin	**Potomac River**	
Discharge Point (LAT)	**38° 30′ 47″**	
Discharge Point (LONG)	**77° 18′ 11″**	

Outfall 016 – Mainside Drainage (South)

The discharge consists of stormwater runoff from the southern half of Mainside, which includes the Base Motor Pool parking area and oil storage tank areas. Runoff flows through an Oil Water Separator (OWS) prior to discharge. The Outfall is a 60-inch corrugated metal pipe that discharges to an unnamed tributary to the Potomac River.

Observations:

- **Low flow at the time of inspection.**
- **This outfall is usually at least partially submerged due to tidal influences. At the time of inspection, the pipe was almost completely submerged.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 019**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**	**COD (mg/L)**			**NL**
BOD_5 (mg/L)			**NL**	**Total Petroleum Hydrocarbons**			**NL**

Receiving Stream	**Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 30′ 07″**
Discharge Point (LONG)	**77° 18′ 07″**

Outfall 019 – Aeroclub

The Outfall is located near the end of the airfield runway adjacent to the aeroclub maintenance building, jet engine test pad and the fire training pit. The Aeroclub has relocated due to maintenance on the runways and buildings. Sampling occurs upstream from the outfall due to debris and tidal influences.

Observations:

- **Access to this area was not possible at the time of inspection due to the security issues. At the previous inspection (09-16-06) the following items were noted: (1) the pipe was approximately ½ full with debris and (2) Access to the outfall was in need of mowing. Ms. Heric did state that these items had been corrected shortly after the previous inspection.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 022**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**COD (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**	**Total Petroleum Hydrocarbons**			**NL**
TSS (mg/L)			**NL**				

Receiving Stream	**Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 29′ 38″**
Discharge Point (LONG)	**77° 18′ 39″**

Outfall 022 - Vehicle Hobby Shop

Discharge source is storm water from the parking lot area adjacent to the vehicle hobby shop and building roof drains.

Observations:

- **The Vehicle hobby shop has been relocated since the reissuance of the permit.**
- **The facility is investigating the potential to remove this outfall during the next permit renewal.**
- **This outfall is usually submerged due to the tidal influence in the area. At the time of the inspection the outfall was visible and not discharging.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 030**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Temperature (°C)**			**32.0**
pH (SU)	**6.0**		**9.0**	**Oil & Grease (mg/L)**			**NL**
TSS (mg/L)			**NL**				

Receiving Stream	**Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 30′ 40″**
Discharge Point (LONG)	**77° 18′ 05″**

Outfall 030 – BOBO Hall

Discharge for this outfall originates from the loading dock and adjacent parking area around BOBO Hall. The loading dock drainage system has been modified to include a trench drain that discharges to the sanitary sewer to prevent cafeteria equipment and loading dock wash down from discharging via Outfall 030. The Outfall consists of a discharge pipe and concrete headwall located down a set of access stairs.

Observations:

- **At the previous inspection (09-16-06), the following was noted: "The stairs have pulled even further from the bank; brush growth has also begun to take over the staircase. A large hole now precedes the step up onto the staircase. One leg support is missing and one is loose."**
  - **Since the previous inspection, wood planks were placed over the hole where the stairs were pulling away from the bank. The stairs are still very unstable and DEQ staff did not feel comfortable using them to check the actual discharge pipe.**
  - **Since the previous inspection, the facility did receive permission from DEQ to sample from the manhole just upstream of the outfall pipe due to these safety concerns.**
- **At the previous inspection (09-16-06), several waste drums were located near this outfall with one being uncapped with evidence of leaking and/or spillage.**
  - **This is a repeat issue from the last inspection. There was a black drum that was not capped that had a grease/oil appearance. This open drum was sitting on a pad that was supposed to have a cover. The cover was lying on the ground and filled with frozen rainwater. The same rainstorm had also filled the grease/oil drum which then spill over on the pad and the surround ground.**
  - **At the time of the inspection, DEQ staff did ask the facility staff to address this open grease/oil drum and the staff stated they would address the issue with BOBO Hall staff. DEQ would like verification from the facility that this issue has been resolved as it is a repeat issue from the previous inspection.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 035**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**	**Temperature (°C)**			**32.0**

Receiving Stream	**UT of Potomac River**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 30′ 31″**
Discharge Point (LONG)	**77° 18′ 00″**

Outfall 035 – MCAF

The discharge from this Outfall originates from the Facilities Department Office parking lot and LeJune Hall area. The cooling tower connected to this Outfall has been diverted to the sanitary sewer system.

Observations:

- **At the time of inspection there was a trickling flow.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 072**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Total Petroleum Hydrocarbons (mg/L)**			**30.0**
pH (SU)	**6.0**		**9.0**	**Total Organic Carbon (mg/L)**			**NL**

Receiving Stream	**UT of Beaverdam Run**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 31' 26"**
Discharge Point (LONG)	**77° 24' 40"**

Outfall 072 – Fuel Farm

The farm is comprised of eight (8) above ground storage tanks:

- 75,000 gallon, Ultra low sulfur diesel fuel (#2 fuel oil)
- 75,000 gallon, Ultra low sulfur diesel fuel (#2 fuel oil)
- 75,000 gallon, JP8
- 75,000 gallon, JP8
- 25,000 gallon, Ultra low sulfur diesel fuel (#2 fuel oil)
- 25,000 gallon, Gasoline tank
- 25,000 gallon cylindrical tank, Ultra low sulfur diesel fuel (#2 fuel oil)
- 12,500 gallon cylindrical tank, Gasoline tank

All tanks are externally bermed with an earthen mound and internally with gravel. Stormwater runoff from two grates in the loading and off loading area and internally from the berms flows into a 5,000 gallon Oil Water Separator (OWS). The valve from the bermed area is kept closed except during a manned discharge to the separator and the outfall. There is an emergency by-pass available to circumvent the OWS during extremely high runoff rates. The by-pass is padlocked to prevent accidental diversion of stormwater during normal operations. All discharges are recorded on site with the date, time, duration, etc.

Observations:

- **The berms were well maintained.**
- **At the previous inspection (09-16-06), there was evidence of burrowing around the concrete drainage ditch after the headwall. Personnel had indicated that groundhogs were the cause and attempts continue to relocate/remove them. All evidence of the burrowing was fixed and not present at the current inspection of the facility.**
- **Fuel tanks are in need of repainting. However the staff stated that these tanks are supposed to be painted sometime this year.**
- **The OWS was cleaned in May/June 2006. The OWS is scheduled to be cleaned this spring once the weather warms up.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 073**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**UT of Beaverdam Run**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 31′ 16″**
Discharge Point (LONG)	**77° 25′ 26″**

Outfall 073 – Landfill Stormwater

The municipal landfill has been closed. Stormwater runoff is directed to this basin to provide for settling of solids prior to discharge.

Observations:

- **Access to the sampling point requires crossing over large area of rip-rap and can be difficult. Personnel would like to investigate the possibility of moving the sampling point.**
- **At the previous inspection (09-16-06), the surrounding area was in need of mowing. This had been rectified during the current inspection of the facility.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 074**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**UT of Beaverdam Run**
Basin	**Potomac River**
Discharge Point (LAT)	**38° 31′ 23″**
Discharge Point (LONG)	**77° 25′ 19″**

Outfall 074 – Landfill Stormwater

The municipal landfill has been closed. Stormwater runoff is directed to this basin to provide for settling of solids prior to discharge.

Observations:

- **Approximately one-half of the outfall was submerged in a wetland area.**
- **At the previous inspection (09-16-06), access to the outfall was not possible due to overgrown brush. This had been rectified during the current inspection of the facility.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 086**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**				
	Receiving Stream			**UT of Chopawamsic Creek**			
	Basin			**Potomac River**			
	Discharge Point (LAT)			**38° 31′ 30″**			
	Discharge Point (LONG)			**77° 22′ 24″**			

Outfall 086 – Russell Road Landfill

This outfall captures all the stormwater from the southern half of the landfill and has replaced Outfalls 087, 088 and 089. The sampling point is rather difficult to access. The sampling location is located down a steep decline and ends at a natural drainage ravine, which receives the runoff from the landfill.

Observations:

- **The sampling point was discharging at the time of the inspection.**
- **Stairs have been installed at the sampling point for access.**
- **At the previous inspection (09-16-06), a path needed to be mowed through the grass to access the woods that lead to the outfall. This had been rectified during the current inspection of the facility.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 090**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS (mg/L)**			**NL**
pH (SU)	**6.0**		**9.0**				
	Receiving Stream			**UT of Chopawamsic Creek**			
	Basin			**Potomac River**			
	Discharge Point (LAT)			**38° 31′ 31″**			
	Discharge Point (LONG)			**77° 22′ 06″**			

Outfall 090 – Russell Road Landfill

This discharge point captures the stormwater from the northern half of the landfill. A handrail has been installed to readily access the sampling point.

Observations:

- **There was a slight discharge at the time of inspection.**
- **At the previous inspection (09-16-06), the path along the handrail needed to be cleared of growing trees. This had been rectified during the current inspection of the facility.**

EFFLUENT LIMITS: SPECIFY UNITS **Outfall 091**							
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**Temperature (°C)**			**32.0**
pH (SU)	**6.0**		**9.0**				

Receiving Stream	**Potomac River**	
Basin	**Potomac River**	
Discharge Point (LAT)	**38° 30′ 11″**	
Discharge Point (LONG)	**77° 18′ 04″**	

Outfall 091 – Jet Engine Test Pad

This site has two large concrete pads, each with its own drain. A valve has been installed to control the drains. During normal operation, the valve stays in the closed position. The collected rainwater is visually inspected for petroleum sheen and sampling prior to discharge. The water is pumped onto the grassy area to the south of the pads.

Observations:

- **Access to this area was not possible at the time of inspection due to the security issues.**

The following Outfalls do not have sampling requirements:

Outfall 018 – HMX1 Supply Depot

This outfall receives flow from stormwater runoff from parking lot drains, roof drains and the warehousing complex just north of the hobby shop complex. The outfall consists of a discharge pipe and concrete headwall that discharges to a rip rap lined ditch leading to the Potomac River.

Observations:

- **At the previous inspection (09-16-06), the surrounding area was in need of general housekeeping/maintenance. This has been rectified since the last inspection.**
- **This discharge pipe was visible during the inspection, but the tidal influence has washed some debris close to the outfall pipe.**
- **There was a slight trickle discharge at the time of inspection.**

Outfall 075 – Construction Equipment Repair (CER)

This Outfall receives runoff from the construction equipment repair lot and an adjacent rifle range. The discharge pipe is approximately a 24" diameter steel corrugated pipe.

Observations:

- **The sandbag steps and gravel pathway have been replaced by wooden steps and walkway.**
- **At the previous inspection, the outfall pipe has corroded and split so discharge occurs prior to the end of the pipe.**
  - **Since the previous inspection (09-16-06), the pipe was cut off at the corroded area so it now discharges at the end of the pipe. However, the section of pipe that was cut off was left just downstream in the receiving stream. DEQ staff asked the facility to have this cleaned up by removing it from the stream.**

The following Outfalls were removed during the 2006 permit reissuance:

Outfall 015 – Airfield Refueling Area
- **The pond has been filled.**

Outfall 040 – Officer's Swimming Pool
- **The pool has been decommissioned.**

Outfall 085 – MCAF Barracks
- **Flow has been diverted to sanitary sewer.**

Outfall 087, 088, 089 – Russell Road Landfill
- **All flow is now encompassed into outfall 086.**

OUTFALL SUMMARY				
Outfall #	**Location**	**Treatment**	**Parameters**	**Frequency**
003	Mainside WTP	Sedimentation	Flow, pH, TSS, CL2	Monthly
009	NCO Swimming Pool	Dechlorination	Flow, pH, Cl2	Monthly
010	Mainside Drainage – North	None	Flow, pH, Temp, Cl2 Toxicity	Monthly Annually
013	MWR Hobby Shop	None	Flow, pH	Quarterly
014	HMX-1 Hangars & Maintenance	None	Flow, pH, Temp	Monthly
016	Mainside Drainage – South	Oil Water Separator	Flow, pH, TSS, Temp TPH, Toxicity	Monthly Quarterly
018	HMX-1 Supply Depot	None	VISUAL Inspections only	
019	Aero Club	None	Flow, TSS, pH, BOD, COD, TPH	Annually
022	MWR Hobby Lot	None	Flow, TSS, pH, COD, TPH	Annually
030	BoBo Hall	None	Flow, O&G, pH, TSS	Quarterly
035	BOQ	None	Flow, pH, TSS,	Quarterly
072	Fuel Farm	Oil Water Separator	Flow, pH, TOC, TPH	Quarterly
073	Landfill	Sedimentation	Flow, TSS, pH	Annually
074	Landfill	Sedimentation	Flow, TSS, pH	Annually
075	CER	None	VISUAL Inspections only	
086	Russell Road Landfill	Sedimentation	Flow, pH, TSS	Quarterly
090	Russell Road Landfill	Sedimentation	Flow, pH, TSS	Quarterly
091	Jet Engine Test Pads	Visual	Flow, pH, TPH, Temp	Annually

Quantico Industrial
VA0002151

TECHNICAL INSPECTION SUMMARY

Comments/Recommendations for action from the September 19, 2006: Updates are in bold type

- NREAB staff should be commended for the conscious effort to ensure that non-stormwater discharges do not occur through vigilant inspections and cooperation with base personnel.
- At the time of inspection the following outfalls were in need of general grounds maintenance (mowing grass, cutting back brush):
  - Outfalls 010, 018, 019, 035, 086, and 090. **These conditions have been corrected.**
- Outfalls of concern:
  - Outfall 014: Access to the outfall and pond need to be cleared and the containment booms removed. **This outfall was not accessed due to security restrictions at the time of inspection. DEQ did drive by the outside the fence line and statements from the facility staff indicated this has been corrected.**
  - Outfall 030: Access to this outfall should be evaluated. The stairs have become overgrown with brush and the overall condition has deteriorated since the last inspection. **Although boards were placed to cover the hole between the bank and where the stairs had separated, the access to the outfall pipe is still an un-safe situation. Additionally, there is still brush and vegetation growing up and through the stairs.**
  - Outfall 073: Sampling at this outfall can be difficult due to the large rip-rap that must be crossed to reach the sampling point. Personnel inquired about moving the sampling point. Per discussions NERAB staff will investigate further (comparison sampling). **Facility staff still must cross the rip-rap to access the sampling point.**

Comments/Recommendations for action from the January 9, 2009:

- **NREAB staff should be commended for the conscious effort to ensure that non-stormwater discharges do not occur through vigilant inspections and cooperation with base personnel.**
- **The facility should evaluate the following outfalls with DEQ's Office of Water Permitting during the next permit renewal cycle:**
  - **Outfalls 013 and 022**
- **Outfalls of concern:**
  - **Outfall 030:**
    1) **Access to this outfall should be evaluated. The stairs have become overgrown with brush and the overall condition has deteriorated since the last inspection. (This is a repeat concern from previous inspections.)**
    2) **There was a black drum that was not capped that had a grease/oil appearance. This open drum was sitting on a pad that was supposed to have a cover. The cover was lying on the ground and filled with frozen rainwater. The same rainstorm had also filled the grease/oil drum which then spill over on the pad and the surrounding ground. DEQ would like verification from the facility that this issue has been resolved as it is a repeat issue from the previous inspection.**
  - **Outfall 073: Sampling at this outfall can be difficult due to the large rip-rap that must be crossed to reach the sampling point. Personnel inquired about moving the sampling point.**
  - **Outfall 075: The outfall pipe had been documented at the previous inspection as being corroded and split so the discharge was occurring prior to the end of the pipe. The facility staff did correct the problem by cutting the pipe at the corroded area. However, the cut piece of pipe was left in the stream. DEQ staff requested that the facility staff remove and properly dispose of this piece of cut pipe.**

Virginia Department of Environmental Quality
Northern Regional Office

TECHNICAL INSPECTION REPORT

FACILITY NAME: Quantico MCB NREAB Industrial			**INSPECTION DATE:**	01-09-09
			INSPECTOR	Wilamena Harback
PERMIT No.: VA0002151			**REPORT DATE:**	02-09-09
TYPE OF FACILITY:	☐ Municipal	☑ Major	**TIME OF INSPECTION:**	Arrival 0745 hrs / Departure 1340 hrs
	☑ Industrial	☐ Minor		
	☐ Federal	☐ Small Minor	**TOTAL TIME SPENT (including prep & travel)**	32 hours
	☐ HP	☐ LP		
PHOTOGRAPHS:	☑ Yes	☐ No	**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / Date:	Ed Stuart 02-10-09			
PRESENT DURING INSPECTION:	DEQ Multi-Media with: Air (Tammy Gumbita), Remediation (John West) and Water (Wilamena Harback) Quantico MCB NREAD: Patty Greek and Donna Heric			

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Arrived on-site @ 0745.
- Weather conditions were sunny with the temperature in the low-40's.
- DEQ staff was greeted by Ms. Patty Greek and explained the purpose of this visit.
- DEQ staff did review paperwork prior to touring the site. See the Stormwater Inspection Checksheet and Laboratory Inspection Checksheets are attached for further details.
- The following observations were made while walking the facility:
    - The Quantico Marine Corps Base serves as a training center for major elements of the U.S. Marine Corps, officers and senior enlisted personnel and also provides helicopter support for the U.S. Government Executive Branch. Process wastewaters are generated from various operations necessary to provide administrative and logistical support for the installation. The other discharges defined in this permit occur due to storm water runoff associated with the various industrial activities.
    - Ms. Patty Greek and Ms, Donna Heric took DEQ on a tour of the sixteen outfalls that do have sampling requirement and the two other outfalls that only require visual observations (a total of eighteen outfalls).
    - The facility staff was commended on the condition of most of the outfalls, but there were areas of concern that were noted for Outfall 030, 073 and 075 (detailed in the Technical Inspection Summary prior to this sheet).
- Departed site @ 1340.

Permit #	VA0002151

NOTES and COMMENTS:

PHOTOGRAPH LOG

- Photos taken by Wilamena Harback
- Photos can be located on the DEQ U drive @ Photos - Water Facilities – Quantico MCB – Industrial – Industrial 01-09-09
- For security reasons, photos at the following outfalls are not permitted:
  - 014, 019, and 091

DMR ISSUES:
None

COMPLIANCE AUDITING ASSESMENT:
None

INSPECTION ISSUES
None

CORRECTIVE ACTION(S) TAKEN:
NA

Permit #	VA0002151

EFFLUENT FIELD DATA: Not Applicable

Flow	MGD	**Dissolved Oxygen**	mg/L	**TRC (Contact Tank)**	mg/L
pH	S.U.	**Temperature**	°C	**TRC (Final Effluent)**	mg/L
Was a Sampling Inspection conducted?	☐ Yes (see Sampling Inspection Report) ☑ No				

CONDITION OF OUTFALL AND EFFLUENT CHARACTERISTICS:

1. Type of outfall: ☐ Shore based ☐ Submerged Diffuser? ☐ Yes ☑ No
   Comments: ** See comments for all Outfalls in the Technical Inspection Summaries for all Outfalls.
2. Are the outfall and supporting structures in good condition? ☐ Yes ☐ No
   Comments: ** See comments for Outfall 030 in the Technical Inspection Summary.
3. Final Effluent (evidence of following problems): ☐ Sludge bar ☐ Grease
   ☐ Turbid effluent ☐ Visible foam ☐ Unusual color ☐ Oil sheen
4. Is there a visible effluent plume in the receiving stream? ☐ Yes ☑ No
   Comments:
5. Receiving stream: ☑ No observed problems ☐ Indication of problems (explain below)
   Comments:

REQUIRED CORRECTIVE ACTIONS:

1. **The black drum found near Outfall 030 that was uncovered. For details see the Technical Inspection Summary.**

INSPECTION RECOMMENDATIONS

1. **Access to Outfall 030 should be evaluated. The stairs have become overgrown with brush and the overall condition has deteriorated since the last inspection.**
2. **Sampling at Outfall 073 can be difficult due to the large rip-rap that must be crossed to reach the sampling point. Personnel inquired about moving the sampling point.**
3. **The Outfall pipe for Outfall 075 had been documented at the previous inspection as being corroded and split so the discharge was occurring prior to the end of the pipe. The facility staff did correct the problem by cutting the pipe at the corroded area. However, the cut piece of pipe was left in the stream.**

Facility:	**Quantico MCB NREAB Industrial**
Address:	**60,600 Acres in eastern Prince William, Stafford and Fauquier Counties**
County/city:	
Contact/Title	**Ms. Sally Mackle**

VPDES NO.	**VA0002151**

DEPARTMENT OF ENVIRONMENTAL QUALITY
STORM WATER GENERAL FACILITY
INSPECTION REPORT

Inspection date:	**01-09-09**	Date form completed:	**02-09-09**
Inspection by:	**Wilamena Harback**	Inspection agency:	**DEQ/NRO**
Time spent:	**32 hours**		
Reviewed by: **Ed Stuart 02-10-09**			
Present at inspection:	**Ms. Patty Greek and Ms. Donna Heric – USMCB Quantico NREAB**		

TYPE OF INSPECTION:

Routine	**X**	Reinspection		Compliance/assistance/complaint	
Date of previous inspection:	**09-19-06**	Agency:			
	Other:				

Storm Water P3 available and up dated? **April 2006**	YES	**X**	NO	
Outfalls Identified in SWP3? **Due to facility size, one map per command area.**	YES	**X**	NO	
Site Map with Drainage and Flows available?	YES	**X**	NO	
Has there been any new construction? **Non affecting Stormwater**	YES		NO	**X**
If yes, were the plans and specifications approved? **NA**	YES		NO	
If yes, was SWP3 plan amended? **NA**	YES		NO	
Quarterly Visual Results available with SWP3?	YES	**X**	NO	
Site Inspections performed and documented? (Minimum Quarterly) **Multiple site during November 2008**	YES	**X**	NO	
Training performed and documented? **Most Recent was 11-05-08**	YES	**X**	NO	
Comprehensive Site Evaluation and associated documents available?	YES	**X**	NO	
Non-storm water certification? **08-10-06**	YES	**X**	NO	
Oil or other Hazardous Spills? **None**	YES		NO	**X**
Sampling Required and performed correctly, records available? **All labeled with all COC's and COA's**	YES	**X**	NO	

OVERALL APPEARANCE OF FACILITY	GOOD	**X**	AVERAGE		POOR	

		YES	NO
	Non-Storm Water Prohibition	X	
	Additional Storm Water Pollution Prevention Plan Requirements; Measures & Controls: a. Good Housekeeping 1) Vehicle and Equipment Storage Areas 2) Fueling Areas 3) Material Storage Areas 4) Vehicle and Equipment Cleaning Areas 5) Vehicle and Equipment Maintenance Areas b. Inspections: Storage areas for vehicles and equipment maintenance and cleaning (indoors and outdoors), material storage areas. Follow up procedures shall be used. Records must be maintained. c. Employee Training: Minimum annual training to include; SWP3; management of oil and spent solvent; erosion and sediment control plan (can be in the mine drainage plan); spill prevention response and control (SPCC); fueling procedures, good housekeeping practices, painting procedures and used battery management. d. Best Management Practices (BMP) documented and performed in accordance with the permit and SWPPP.	 X X X X X X X	 X

SUMMARY

INSPECTION COMMENTS:

	The SWPPP and associated documentation was in good condition.
	Access to Outfall 030 should be evaluated. The stairs have become overgrown with brush and the overall condition has deteriorated since the last inspection.
	Sampling at Outfall 073 can be difficult due to the large rip-rap that must be crossed to reach the sampling point. Personnel inquired about moving the sampling point.
	The Outfall pipe for Outfall 075 had been documented at the previous inspection as being corroded and split so the discharge was occurring prior to the end of the pipe. The facility staff did correct the problem by cutting the pipe at the corroded area. However, the cut piece of pipe was left in the stream.
	Overall, the facility should be commended on the condition of all associated documentation for this permit; as well as all 18 Outfalls.

COMPLIANCE RECOMMENDATIONS FOR ACTION

	The black drum found near Outfall 030 that was uncovered. For details see the Technical Inspection Summary.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT
10/01

FACILITY NO: VA0002151	INSPECTION DATE: 01-09-09	PREVIOUS INSP. DATE: 9-19-06	PREVIOUS EVALUATION: No Deficiencies	TIME SPENT: 2.5 Hour

NAME/ADDRESS OF FACILITY:	FACILITY CLASS:	FACILITY TYPE:	ANNOUNCED INSPECTION?
U.S. Marine Corps Quantico Marine Corps Base Natural Resources and Environmental Affairs 3250 Catlin Avenue Quantico, VA	(X) MAJOR ( ) MINOR ( ) SMALL ( ) VPA/NDC	( ) MUNICIPAL ( ) INDUSTRIAL (X) FEDERAL ( ) COMMERCIAL LAB	(X) YES ( ) NO **SCHEDULED INSPECTION?** (X) YES ( ) NO

INSPECTOR(S):	REVIEWERS:	PRESENT AT INSPECTION:
Wilamena Harback	Ed Stuart 02-10-09	Ms. Patty Greek and Ms. Donna Heric - NREAB

LABORATORY EVALUATION	DEFICIENCIES? Yes	No
LABORATORY RECORDS		X
GENERAL SAMPLING & ANALYSIS		X
LABORATORY EQUIPMENT	X	
pH ANALYSIS PROCEDURES		X
TOTAL RESIDUAL CHLORINE ANALYSIS PROCEDURES	X	

QUALITY ASSURANCE/QUALITY CONTROL

Y/N	QUALITY ASSURANCE METHOD	PARAMETERS	FREQUENCY
N/A	REPLICATE SAMPLES		
N/A	SPIKED SAMPLES		
Y	STANDARD SAMPLES	pH, Chlorine spec check	Each use, Quarterly
N/A	SPLIT SAMPLES		
N/A	SAMPLE BLANKS		
N/A	OTHER		
Y	EPA-DMR QA DATA? Study 28	RATING: (X) No Deficiency ( ) Deficiency ( ) NA	
N/A	QC SAMPLES PROVIDED?	RATING: ( ) No Deficiency ( ) Deficiency (X) NA	

FACILITY #: VA0002151

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

X	SAMPLING DATE	X	ANALYSIS DATE		CONT MONITORING CHART
X	SAMPLING TIME	X	ANALYSIS TIME	X	INSTRUMENT CALIBRATION
X	SAMPLE LOCATION	X	TEST METHOD	X	INSTRUMENT MAINTENANCE
				X	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

X	SAMPLING SCHEDULES	X	CALCULATIONS	X	ANALYSIS PROCEDURES

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	X		
DO BENCH SHEETS INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?			X
IS THE DMR COMPLETE AND CORRECT? MONTH(S) REVIEWED: **December 2008**	X		
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	X		

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATION(S) ACCORDING TO PERMIT REQUIREMENTS?	X		
ARE SAMPLE COLLECTION PROCEDURES APPROPRIATE?	X		
IS SAMPLE EQUIPMENT CONDITION ADEQUATE?	X		
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	X		
ARE COMPOSITE SAMPLES REPRESENTATIVE OF FLOW?			X
ARE SAMPLE HOLDING TIMES AND PRESERVATION ADEQUATE?	X		
IF ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE? LIST PARAMETERS AND NAME & ADDRESS OF LAB: **Martel Laboratories** **Parameters: TSS, TPH, O&G, TOC, COD & BOD** **1025 Cromwell Bridge Road** **Baltimore, MD 21286**	X		

LABORATORY EQUIPMENT SECTION

	YES	NO	N/A
IS LABORATORY EQUIPMENT IN PROPER OPERATING RANGE?	X		
ARE ANNUAL THERMOMETER CALIBRATION(S) ADEQUATE?		X	
IS THE LABORATORY GRADE WATER SUPPLY ADEQUATE?			X
ARE ANALYTICAL BALANCE(S) ADEQUATE?			X

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT SUMMARY
10/01

FACILITY NAME:	**Quantico Industrial**	VPDES NO:	**VA0002151**	INSP. DATE:	**09/19/06**
	DEFICIENCIES	**X**	NO DEFICIENCIES		

LABORATORY RECORDS

No Deficiencies were noted during the inspection.

GENERAL SAMPLING AND ANALYSIS

No Deficiencies were noted during the inspection.

LABORATORY EQUIPMENT

Deficiencies were noted during the inspection.

- **The annual NIST verification has not been performed on any equipment since April 2007.**

PARAMETER SUMMARY

pH

No Deficiencies were noted during the inspection.

Total Residual Chlorine (TRC)

Deficiencies were noted during the inspection.

- **The facility was using a Swift Dispenser for dispensing of the DPD powder which is not approved.**

COMMENTS

The facility staff should check the DEQ website at http://www.deq.virginia.gov/vpdes/checklist.html and download the most recent inspection check sheets to keep up to date with changes in minimum laboratory requirements.

ANALYST:	Donna Heric	VPDES NO	VA0002151

Parameter: Total Residual Chlorine
Method: DPD Colorimetric (HACH Pocket Colorimeter™)
01/08

Instrument: **HACH Pocket II**

METHOD OF ANALYSIS:

X	HACH Manufacturer's Instructions (Method 8167) plus an edition of Standard Methods
	18th Edition of Standard Methods 4500-Cl G
	21st Edition of Standard Methods 4500-Cl G (00)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? NOTE: Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use Spec√ ™. [SM 1020 B.1] **08-15-07**	X	
2)	Are the DPD PermaChem® Powder Pillows stored in a cool, dry place? [Mfr.]		X
3)	Are the pillows within the manufacturer's expiration date? [Mfr]	X	
4)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr] **07-25-08**	X	
5)	When pH adjustment is required, is H_2SO_4 or NaOH used? [11.3.1]	X	
6)	Are cells clean and in good condition? [Mfr]	X	
7)	Is the low range (0.01-mg/L resolution) used for samples containing residuals from 0-2.00 mg/L? [Mfr.]	X	
8)	Is calibration curve developed (may use manufacturer's calibration) with daily verification using a high and a low standard? NOTE: May use manufacturer's installed calibration and commercially available chlorine standards for daily calibration verifications. [18th ed 1020 B.5; 21st ed 4020 B.2.b] **HACH Spec √, expires June 2009**	X	
9)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	X	
10)	Is the meter zeroed correctly by using sample as blank for the cell used? [Mfr.]	X	
11)	Is the instrument cap placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	X	
12)	Is the DPD Total Chlorine PermaChem® Powder Pillow mixed into the sample? [HACH 11.1]	X	
13)	Is the analysis made at least three minutes but not more than six minutes after PermaChem® Powder Pillow addition? [11.2]	X	
14)	If read-out is flashing [2.20], is sample diluted correctly, then reanalyzed? [1.2 & 2.0]	X	
15)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	X	
16)	Is a duplicate sample analyzed after every 20 samples if citing 18th Edition [SM 1020 B.6] or daily for 21st Edition [SM 4020 B.3.c]?	NA	
17)	If duplicate sample is analyzed, is the relative percent difference (RPD) ≤ 20? [18th ed. Table 1020 I; 21st ed. DEQ]	NA	

COMMENTS:	
PROBLEMS:	**3) The facility was using a Swift Dispenser to dispense the DPD powder. This is not approved for use in wastewater analysis. The facility was going to immediately order the approved DPD powder pillows.**

ANALYST:	Donna Heric	VPDES NO	VA0002151

Parameter: Hydrogen Ion (pH)
Method: Electrometric
01/08

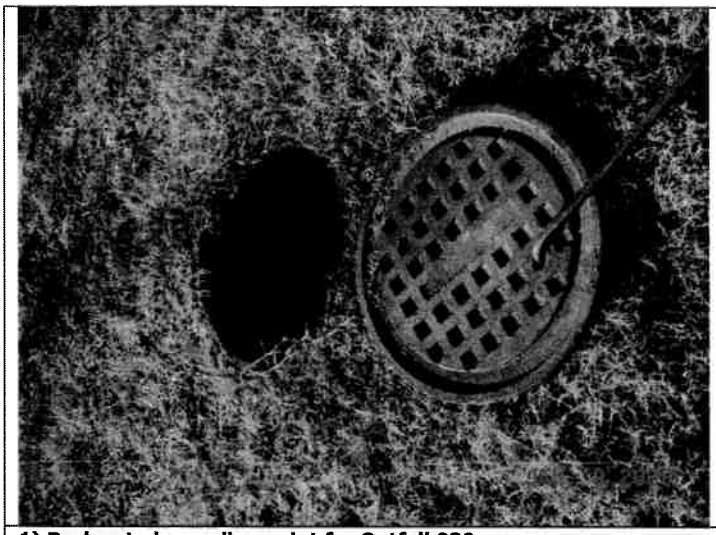
Meter: **Orion 230**

METHOD OF ANALYSIS

X	18th Edition of Standard Methods-4500-H-B
	21st or On-Line Edition of Standard Methods-4500-H-B (00)

	pH is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]	**Y**	**N**
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing the analysis? **NOTE:** Analyze 4 samples of known pH. May use external source of buffer (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be ± 0.1 SU of the known concentration of the sample. [SM 1020 B.1] **08-15-07**	**X**	
2)	Is the electrode in good condition (no chloride precipitate, etc.)? [2.b/c and 5.b]	**X**	
3)	Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	**X**	
4)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [4.a] NOTE: Follow manufacturer's instructions.	**X**	
5)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Agreement should by within ± 0.1 SU. [4.a]	**X**	
6)	Do the buffer solutions appear to be free of contamination or growths? [3.1]	**X**	
7)	Are buffer solutions within their listed shelf life or have they been prepared within the last 4 weeks? [3.a] **Fresh buffer packs (individual ready packs) daily with use.**	**X**	
8)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	**X**	
9)	For meters with ATC that also have temperature display, was the thermometer calibrated annually? [SM2550 B.1] **April 2007**		**X**
10)	Is the temperature of buffer solutions and samples recorded when determining pH? [4.a]	**X**	
11)	Is sample analyzed within 15 minutes of collection? [40 CFR 136.6]	**X**	
12)	Was the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinse solution)? [4.a]	**X**	
13)	Is the sample stirred gently at a constant speed during measurement? [4.b]	**X**	
14)	Does the meter hold a steady reading after reaching equilibrium? [4.b]	**X**	
15)	Is a duplicate sample analyzed after every 20 samples if citing 18th or 19th Edition [1020 B.6] or daily for 20th or 21st Edition [Part 1020] Note: Not required for *in situ* samples.	**NA**	
16)	Is pH of duplicate samples within 0.1 SU of the original sample? [Part 1020]	**NA**	
17)	Is there a written procedure for which result will be reported on DMR (Sample or Duplicate) and is this procedure followed? [DEQ]	**NA**	

COMMENTS:	• **Most outfalls are performed in-situ except for a couple where it is grabbed and immediately analyzed.**
PROBLEMS:	**9) The instrument was last verified in April 2007.**

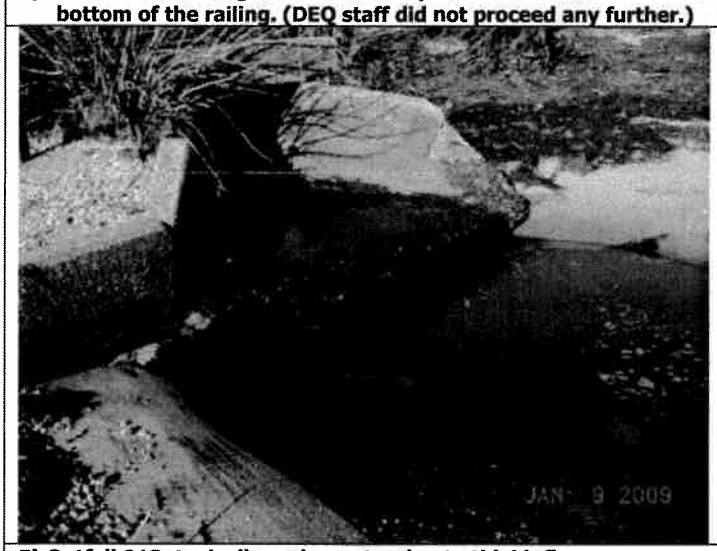


1) Re-located sampling point for Outfall 030.

2) Un-stable stairs to Outfall 030, notice vegetative growth and boards cover hole where the stairs separated from the bank.

3) View from standing on the board in photo #2. Outfall is at the bottom of the railing. (DEQ staff did not proceed any further.)

4) Oil/Grease drum overflowing with rainwater. Note the cover behind it and filled with frozen rainwater.



5) Outfall 013, typically under water due to tidal influence.

6) Outfall 022, typically under water due to tidal influence.

7) Outfall 009, NCO Swimming Pool (closed). Stream had aquatic life.

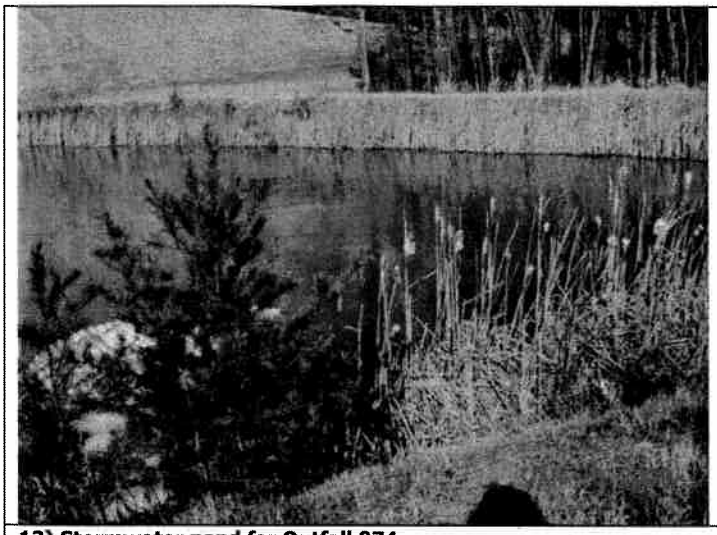
8) Outfall 086 for the closed Russell Road Landfill.

9) Outfall 090 for the closed Russell Road Landfill.

10) Outfall 073, closed Municipal Landfill.

11) Stormwater pond for Outfall 073.

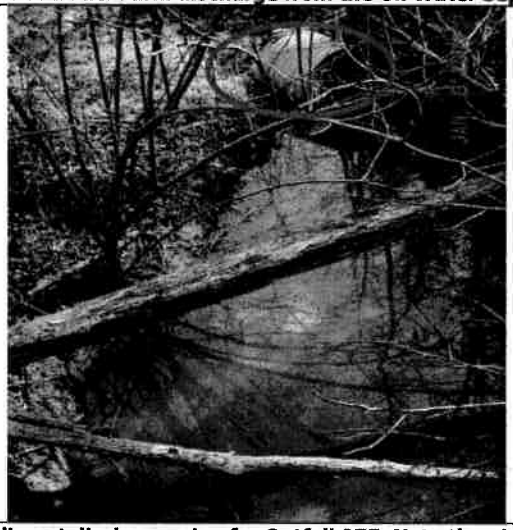
12) Outfall 074, closed Municipal Landfill.



13) Stormwater pond for Outfall 074.

14) Outfall 072 Fuel Farm discharge from the Oil Water Seperator.

15) Sampling point for Outfall 010, because Outfall pipe is typically submerged.



16) Standing at discharge pipe for Outfall 075. Note the pipe remnant in the stream bed (red).

17) Outfall 003 behind the Mainside WTP. WTP no longer discharges into the lagoon that uses this outfall.

18) Outfall 018 for HMX1 Supply Depot. This area is typically submerged due to tidal influence.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Quantico Industrial Permit No.: VA0002151

Receiving Stream: Various Streams - 10:1 Dilution Ratio Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	50 mg/L	1Q10 (Annual) =	9 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	25 deg C	7Q10 (Annual) =	9 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	20 deg C	30Q10 (Annual) =	9 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	20 deg C
90% Maximum pH =	8 SU	1Q10 (Wet season) =	9 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8 SU
10% Maximum pH =	SU	30Q10 (Wet season)	9 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	9 MGD			Discharge Flow =	1 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	9 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+03**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.3E+01**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+01**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+01	--	na	5.0E-03	--	--	--	--	--	--	--	--	**3.0E+01**	**--**	**na**	**5.0E-03**
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.24E+00	na	--	8.4E+01	1.2E+01	na	--	--	--	--	--	--	--	--	--	**8.4E+01**	**1.2E+01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	1.71E+00	na	--	8.4E+01	1.7E+01	na	--	--	--	--	--	--	--	--	--	**8.4E+01**	**1.7E+01**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+05**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.4E+03**
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+03	1.5E+03	na	--	--	--	--	--	--	--	--	--	**3.4E+03**	**1.5E+03**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+03**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-02**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+00**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+00**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+00**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+00**
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+01**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+05**
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+02**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+04**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+04**
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**1.8E+01**	**6.6E+00**	**na**	**--**
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+01	4.3E-02	na	8.1E-02	--	--	--	--	--	--	--	--	**2.4E+01**	**4.3E-02**	**na**	**8.1E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+06	2.3E+06	na	--	--	--	--	--	--	--	--	--	**8.6E+06**	**2.3E+06**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	**1.9E+02**	**1.1E+02**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+04**

Attachment 7

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-01	4.1E-01	na	--	--	--	--	--	--	--	--	--	8.3E-01	4.1E-01	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+03	4.2E+02	na	--	--	--	--	--	--	--	--	--	3.2E+03	4.2E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+02	1.1E+02	na	--	--	--	--	--	--	--	--	--	1.6E+02	1.1E+02	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+01	5.0E+01	na	--	--	--	--	--	--	--	--	--	7.0E+01	5.0E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+02	5.2E+01	na	1.6E+05	--	--	--	--	--	--	--	--	2.2E+02	5.2E+01	na	1.6E+05
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-02	--	--	--	--	--	--	--	--	--	--	na	3.1E-02
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-02	--	--	--	--	--	--	--	--	--	--	na	2.2E-02
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+01	1.0E-02	na	2.2E-02	--	--	--	--	--	--	--	--	1.1E+01	1.0E-02	na	2.2E-02
Demeton	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E+00	1.7E+00	na	--	--	--	--	--	--	--	--	--	1.7E+00	1.7E+00	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+04	--	--	--	--	--	--	--	--	--	--	na	1.3E+04
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E+00	--	--	--	--	--	--	--	--	--	--	na	2.8E+00
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+03	--	--	--	--	--	--	--	--	--	--	na	3.7E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+04	--	--	--	--	--	--	--	--	--	--	na	7.1E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+05	--	--	--	--	--	--	--	--	--	--	na	1.0E+05
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+03	--	--	--	--	--	--	--	--	--	--	na	2.9E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E+00	5.6E-01	na	5.4E-03	--	--	--	--	--	--	--	--	2.4E+00	5.6E-01	na	5.4E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+05	--	--	--	--	--	--	--	--	--	--	na	4.4E+05
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+03	--	--	--	--	--	--	--	--	--	--	na	8.5E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+07	--	--	--	--	--	--	--	--	--	--	na	1.1E+07
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+04	--	--	--	--	--	--	--	--	--	--	na	4.5E+04
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+04	--	--	--	--	--	--	--	--	--	--	na	5.3E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-07	--	--	--	--	--	--	--	--	--	--	na	5.1E-07
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+01	--	--	--	--	--	--	--	--	--	--	na	2.0E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E+00	5.6E-01	na	8.9E+02	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	na	8.9E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E+00	5.6E-01	na	8.9E+02	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	na	8.9E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E+00	5.6E-01	--	--	--	--	--	--	--	--	--	--	2.2E+00	5.6E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+02	--	--	--	--	--	--	--	--	--	--	na	8.9E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-01	3.6E-01	na	6.0E-01	--	--	--	--	--	--	--	--	8.6E-01	3.6E-01	na	6.0E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E+00	--	--	--	--	--	--	--	--	--	--	na	3.0E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+04	--	--	--	--	--	--	--	--	--	--	na	5.3E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E+00	3.8E-02	na	7.9E-03	--	--	--	--	--	--	--	--	5.2E+00	3.8E-02	na	7.9E-03
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E+00	3.8E-02	na	3.9E-03	--	--	--	--	--	--	--	--	5.2E+00	3.8E-02	na	3.9E-03
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-02	--	--	--	--	--	--	--	--	--	--	na	2.9E-02
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+03	--	--	--	--	--	--	--	--	--	--	na	1.8E+03
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E+00	--	--	--	--	--	--	--	--	--	--	na	1.7E+00
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E+00	--	na	1.8E+01	--	--	--	--	--	--	--	--	9.5E+00	--	na	1.8E+01
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	--	--	na	3.3E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+01	na	--	--	--	--	--	--	--	--	--	--	2.0E+01	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E+00	--	--	--	--	--	--	--	--	--	--	na	1.8E+00
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+04	--	--	--	--	--	--	--	--	--	--	na	9.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+02	5.6E+01	na	--	--	--	--	--	--	--	--	--	4.9E+02	5.6E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+00	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+01	7.7E+00	--	--	--	--	--	--	--	--	--	--	1.4E+01	7.7E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+04	--	--	--	--	--	--	--	--	--	--	na	1.5E+04
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+04	--	--	--	--	--	--	--	--	--	--	na	5.9E+04
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-01	na	--	--	--	--	--	--	--	--	--	--	3.0E-01	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+03	1.1E+02	na	4.6E+04	--	--	--	--	--	--	--	--	1.0E+03	1.1E+02	na	4.6E+04
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+03	--	--	--	--	--	--	--	--	--	--	na	6.9E+03
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	--	--	na	6.0E+02
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+01	--	--	--	--	--	--	--	--	--	--	na	5.1E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+02	6.6E+01	na	--	--	--	--	--	--	--	--	--	2.8E+02	6.6E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-01	1.3E-01	na	--	--	--	--	--	--	--	--	--	6.5E-01	1.3E-01	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-01	na	6.4E-03	--	--	--	--	--	--	--	--	--	1.4E-01	na	6.4E-03
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-02	5.9E-02	na	3.0E+02	--	--	--	--	--	--	--	--	7.7E-02	5.9E-02	na	3.0E+02
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+06	--	--	--	--	--	--	--	--	--	--	na	8.6E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+02	5.0E+01	na	4.2E+04	--	--	--	--	--	--	--	--	**2.0E+02**	**5.0E+01**	**na**	**4.2E+04**
Silver	0	1.0E+00	--	na	--	1.0E+01	--	na	--	--	--	--	--	--	--	--	--	**1.0E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+02**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+02**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E+00**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E+00	2.0E-03	na	2.8E-02	--	--	--	--	--	--	--	--	**7.3E+00**	**2.0E-03**	**na**	**2.8E-02**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E+00	7.2E-01	na	--	--	--	--	--	--	--	--	--	**4.6E+00**	**7.2E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+03**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+02**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+02**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+02	6.6E+02	na	2.6E+05	--	--	--	--	--	--	--	--	**6.5E+02**	**6.6E+02**	**na**	**2.6E+05**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+03
Arsenic	9.0E+02
Barium	na
Cadmium	3.9E+00
Chromium III	2.5E+02
Chromium VI	6.4E+01
Copper	2.8E+01
Iron	na
Lead	3.4E+01
Manganese	na
Mercury	4.6E+00
Nickel	6.8E+01
Selenium	3.0E+01
Silver	4.2E+00
Zinc	2.6E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Quantico Industrial Permit No.: VA0002151

Receiving Stream: Various Streams - 2:1 Dilution Ratio Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	50 mg/L	1Q10 (Annual) =	1 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	25 deg C	7Q10 (Annual) =	1 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	20 deg C	30Q10 (Annual) =	1 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	20 deg C
90% Maximum pH =	8 SU	1Q10 (Wet season) =	1 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8 SU
10% Maximum pH =	SU	30Q10 (Wet season)	1 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	1 MGD			Discharge Flow =	1 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	1 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	**na**	**2.0E+03**
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	**na**	**1.9E+01**
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	5.0E+00	--	--	--	--	--	--	--	--	--	--	**na**	**5.0E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	1.0E-03	--	--	--	--	--	--	--	--	**6.0E+00**	--	**na**	**1.0E-03**
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.24E+00	na	--	1.7E+01	2.5E+00	na	--	--	--	--	--	--	--	--	--	**1.7E+01**	**2.5E+00**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	1.71E+00	na	--	1.7E+01	3.4E+00	na	--	--	--	--	--	--	--	--	--	**1.7E+01**	**3.4E+00**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	8.0E+04	--	--	--	--	--	--	--	--	--	--	**na**	**8.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	**na**	**1.3E+03**
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	**6.8E+02**	**3.0E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	**na**	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	**na**	**1.0E+03**
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	4.0E-03	--	--	--	--	--	--	--	--	--	--	**na**	**4.0E-03**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.6E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.6E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.6E-01**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	**na**	**3.6E-01**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	**na**	**1.1E+01**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	**na**	**1.3E+05**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	**na**	**4.4E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	**na**	**2.8E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	**na**	**3.8E+03**
Cadmium	0	1.8E+00	6.6E-01	na	--	3.6E+00	1.3E+00	na	--	--	--	--	--	--	--	--	--	**3.6E+00**	**1.3E+00**	**na**	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	**na**	**3.2E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	8.6E-03	na	1.6E-02	--	--	--	--	--	--	--	--	**4.8E+00**	**8.6E-03**	**na**	**1.6E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	**1.7E+06**	**4.6E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.8E+01**	**2.2E+01**	**na**	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	**na**	**3.2E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	2.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**8.2E-02**	**na**	**--**
Chromium III	0	3.2E+02	4.2E+01	na	--	6.5E+02	8.4E+01	na	--	--	--	--	--	--	--	--	--	**6.5E+02**	**8.4E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+01**	**2.2E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	3.6E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E-02**
Copper	0	7.0E+00	5.0E+00	na	--	1.4E+01	9.9E+00	na	--	--	--	--	--	--	--	--	--	**1.4E+01**	**9.9E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	1.0E+01	na	3.2E+04	--	--	--	--	--	--	--	--	**4.4E+01**	**1.0E+01**	**na**	**3.2E+04**
DDD[C]	0	--	--	na	3.1E-03	--	--	na	6.2E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.2E-03**
DDE[C]	0	--	--	na	2.2E-03	--	--	na	4.4E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E-03**
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	2.0E-03	na	4.4E-03	--	--	--	--	--	--	--	--	**2.2E+00**	**2.0E-03**	**na**	**4.4E-03**
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	3.4E-01	na	--	--	--	--	--	--	--	--	--	**3.4E-01**	**3.4E-01**	**na**	**--**
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.6E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.6E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.8E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	5.6E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.6E-01**
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+02**
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.4E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.8E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.2E+02**
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	1.1E-01	na	1.1E-03	--	--	--	--	--	--	--	--	**4.8E-01**	**1.1E-01**	**na**	**1.1E-03**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.8E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.8E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+03**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.2E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	9.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.0E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.6E+02**
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	6.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.8E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.0E-07	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E-07**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	**na**	**1.8E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	**na**	**1.8E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+02**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	7.2E-02	na	1.2E-01	--	--	--	--	--	--	--	--	**1.7E-01**	**7.2E-02**	**na**	**1.2E-01**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	6.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.2E+03	--	--	--	--	--	--	--	--	--	--	na	4.2E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	2.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	7.6E-03	na	1.6E-03	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	1.6E-03
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	7.6E-03	na	7.8E-04	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	7.8E-04
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	5.8E-03	--	--	--	--	--	--	--	--	--	--	na	5.8E-03
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	3.6E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	9.8E-02	--	--	--	--	--	--	--	--	--	--	na	9.8E-02
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	3.4E-01	--	--	--	--	--	--	--	--	--	--	na	3.4E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	3.6E+00	--	--	--	--	--	--	--	--	1.9E+00	--	na	3.6E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	2.2E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	--	--	na	6.6E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	4.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	9.8E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	9.8E+01	1.1E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.8E+00	1.5E+00	--	--	--	--	--	--	--	--	--	--	2.8E+00	1.5E+00	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	3.0E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	6.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	2.0E+02	2.3E+01	na	9.2E+03	--	--	--	--	--	--	--	--	2.0E+02	2.3E+01	na	9.2E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	1.2E+02
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	1.0E+01	--	--	--	--	--	--	--	--	--	--	na	1.0E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	1.3E+01	na	--	--	--	--	--	--	--	--	--	5.6E+01	1.3E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	2.6E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	2.8E-02	na	1.3E-03	--	--	--	--	--	--	--	--	--	2.8E-02	na	1.3E-03
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	1.5E-02	1.2E-02	na	6.0E+01	--	--	--	--	--	--	--	--	1.5E-02	1.2E-02	na	6.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	1.7E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	8.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	1.0E+01	na	8.4E+03	--	--	--	--	--	--	--	--	**4.0E+01**	**1.0E+01**	**na**	**8.4E+03**
Silver	0	1.0E+00	--	na	--	2.1E+00	--	na	--	--	--	--	--	--	--	--	--	**2.1E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	4.0E-04	na	5.6E-03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.0E-04**	**na**	**5.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**1.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	1.3E+02	1.3E+02	na	5.2E+04	--	--	--	--	--	--	--	--	**1.3E+02**	**1.3E+02**	**na**	**5.2E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+03
Arsenic	1.8E+02
Barium	na
Cadmium	7.9E-01
Chromium III	5.0E+01
Chromium VI	1.3E+01
Copper	5.6E+00
Iron	na
Lead	6.7E+00
Manganese	na
Mercury	9.2E-01
Nickel	1.4E+01
Selenium	6.0E+00
Silver	8.4E-01
Zinc	5.2E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Quantico Industrial Permit No.: VA0002151

Receiving Stream: Various Streams - Low Flows Equal Zero Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	50 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	25 deg C	7Q10 (Annual) =	0 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25 deg C
90% Temperature (Wet season) =	20 deg C	30Q10 (Annual) =	0 MGD	- 30Q10 Mix =	100 %	90% Temp (Wet season) =	20 deg C
90% Maximum pH =	8 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8 SU
10% Maximum pH =	SU	30Q10 (Wet season)	0 MGD	- 30Q10 Mix =	100 %	10% Maximum pH =	SU
Tier Designation (1 or 2) =	1	30Q5 =	0 MGD			Discharge Flow =	1 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	0 MGD				
Trout Present Y/N? =	n						
Early Life Stages Present Y/N? =	y						

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	**9.9E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	**9.3E+00**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	**2.5E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	**3.0E+00**	--	na	**5.0E-04**
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.24E+00	na	--	8.4E+00	1.2E+00	na	--	--	--	--	--	--	--	--	--	**8.4E+00**	**1.2E+00**	na	--
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	1.71E+00	na	--	8.4E+00	1.7E+00	na	--	--	--	--	--	--	--	--	--	**8.4E+00**	**1.7E+00**	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	**4.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	**6.4E+02**
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	**5.1E+02**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	**2.0E-03**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	**1.8E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	**1.8E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	**1.8E-01**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	**1.8E-01**
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	**5.3E+00**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	**6.5E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	**2.2E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	**1.4E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	**1.9E+03**
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	**1.8E+00**	**6.6E-01**	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	**1.6E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	na	**8.1E-03**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	**1.6E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+02**	**4.2E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-02**
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	**7.0E+00**	**5.0E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**1.6E+04**
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.1E-03**
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E-03**
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**2.2E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	**na**	**--**
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E-01**
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+02**
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.1E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+02**
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**5.4E-04**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.5E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.5E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E+02**
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**6.0E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	**2.1E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	**1.4E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	**5.3E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	**1.0E-02**	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	na	**7.9E-04**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	na	**3.9E-04**
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	**2.9E-03**
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	**1.8E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	**4.9E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	**1.7E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	**9.5E-01**	--	na	**1.8E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	**1.1E+03**
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	**3.3E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	**2.0E+00**	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	**1.8E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	**9.6E+03**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	**4.9E+01**	**5.6E+00**	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	**1.0E-01**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	**1.5E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	**5.9E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	**3.0E-02**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	**1.0E+02**	**1.1E+01**	na	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	**6.9E+02**
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	**3.0E+01**
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	**6.0E+01**
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	**5.1E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.6E+00**	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	**1.4E-02**	na	**6.4E-04**
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	**7.7E-03**	**5.9E-03**	na	**3.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	**8.6E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	**4.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	**4.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Memorandum

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Water Permits Support — 9th Floor, 629 East Main Street, Richmond, VA

SUBJECT: Mainside Sewage Treatment Plan Mixing Zone Study, Technical Memorandum, Marine Corps Base, Quantico, Virginia, AH Environmental Consultants and Montgomery Watson, October 2000

TO: Tom Faha, NVRO

FROM: Jon van Soestbergen

DATE: November 17, 2000

COPIES: M.D. Phillips

I have reviewed the subject report. The modeling presented and conclusions reached in the report appear reasonable. The report's recommendations that a mixing zone of 250 meters around the outfall (Figure 8 in report) be established and that an acute dilution factor of 10:1 be used for determination of VPDES permit limits are acceptable.

If you have any questions or require additional information, please do not hesitate to contact me at (804) 698-4117.

e:\docs\wp\models\quantico.doc

UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
6280/5
B 046
31 OCT 2000

RECEIVED
NOV 6 2000

Northern VA. Region
Dept. of Env. Quality

Mr. Tom Faha
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, VA 22193

Dear Mr. Faha:

As you are aware, our Mainside Sewage Treatment Plant is completing significant upgrades that will increase the rated capacity to 2.2 million gallons per day. The new, advanced sewage treatment process is designed for biological nutrient removal to meet stringent effluent permit requirements for discharge into Quantico Bight, a tributary to the Potomac River.

Your department previously assigned a standard acute dilution factor of 2:1 to Quantico Bight. We are requesting relief from this acute factor for the purpose of establishing a more appropriate, site-specific dilution factor for application to required effluent bioassay analyses. Based on a recent mixing zone study, we propose an acute 10:1 dilution factor. Additionally, a physical mixing zone boundary of 250 meters, radially, from the discharge point is requested. Find enclosed the Technical Memorandum discussing the results of an assessment of the dilution capacity of the Quantico Bight in support of the above requests.

By copy of this letter, the Technical Memorandum has also been sent to Mr. Dale Phillips at your Richmond office. For technical questions please contact Mr. Anthony Gruber (AH Environmental Consultants) at 757-873-4959.

Our point of contact for this matter is Ms. Kristine Stein at 703-784-4030. We look forward to your decision.

Sincerely,

Bruce C. Frizzell

BRUCE C. FRIZZELL
Head, Natural Resources and
Environmental Affairs Branch
By direction of
the Commanding General

Facility = Quantico Industrial - Outfall 003
Chemical = TRC
Chronic averaging period = 4
WLAa = 38
WLAc =
Q.L. = 100
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average = 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 38
Average Weekly limit = 38.0000000000001
Average Monthly LImit = 38.0000000000001

The data are:

200

The values above are in (µg/l). The values have been converted to mg/l for reporting purposes on the DMR. The limits for outfall 003 are:

The monthly average limit = 0.038 mg/l
The maximum daily limit = 0.038 mg/l

Facility = Quantico Industrial - Outfall 009
Chemical = TRC
Chronic averaging period = 4
WLAa = 38
WLAc =
Q.L. = 100
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average = 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 38
Average Weekly limit = 38.0000000000001
Average Monthly Limit = 38.0000000000001

The data are:

200

The values above are in (µg/l). The values have been converted to mg/l for reporting purposes on the DMR. The limits for outfall 009 are:

The monthly average limit = 0.038 mg/l
The maximum daily limit = 0.038 mg/l

2/27/2006 8:08:48 AM

Facility = Quantico Industrial Outfall 010
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 190
WLAc = 550
Q.L. = 100
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 190
Average Weekly limit = 190
Average Monthly LImit = 190

The data are:

200

2/27/2006 8:31:44 AM

Facility = Quantico Industrial Outfall 016
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 190
WLAc = 550
Q.L. = 100
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 190
Average Weekly limit = 190
Average Monthly LImit = 190

The data are:

200

Appendix A Monitoring Results for Outfall 010

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
06/17/97	Toluene	<9 ug/l	5 ug/l
06/17/97	Dissolved Barium	36 ug/l	2 ug/l
06/17/97	Dissolved Cadmium	0.2 ug/l	0.1 ug/l
06/17/97	Dissolved Copper	7 ug/l	1 ug/l
06/17/97	Dissolved Iron	50 ug/l	30 ug/l
06/17/97	Dissolved Nickel	3 ug/l	1 ug/l
06/17/97	Dissolved Thallium	3 ug/l	1 ug/l
06/17/97	Dissolved Zinc	8 ug/l	5 ug/l
06/17/97	Total Hardness as $CaCO_3$	81.8 mg/l	5 mg/l
06/17/97	Sulfate	88 mg/l	1 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
01/21/98	Dissolved Barium	820 ug/l	2 ug/l
01/21/98	Dissolved Cadmium	0.3 ug/l	0.1 ug/l
01/21/98	Dissolved Chromium	2 ug/l	1 ug/l
01/21/98	Dissolved Copper	1 ug/l	1 ug/l
01/21/98	Dissolved Iron	1490 ug/l	30 ug/l
01/21/98	Dissolved Lead	1 ug/l	1 ug/l
01/21/98	Dissolved Manganese	289 ug/l	10 ug/l
01/21/98	Dissolved Nickel	11 ug/l	1 ug/l
01/21/98	Total Hardness as $CaCO_3$	50.8 mg/l	5 mg/l
01/21/98	Sulfate	15 mg/l	1 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/15/98	Dissolved Barium	88 ug/l	2 ug/l
07/15/98	Dissolved Cadmium	1 ug/l	0.1 ug/l
07/15/98	Dissolved Copper	10 ug/l	1 ug/l
07/15/98	Dissolved Iron	30 ug/l	30 ug/l
07/15/98	Dissolved Lead	3 ug/l	1 ug/l
07/15/98	Dissolved Manganese	249 ug/l	10 ug/l
07/15/98	Dissolved Nickel	39 ug/l	1 ug/l
07/15/98	Dissolved Zinc	40 ug/l	5 ug/l
07/15/98	Total Hardness as $CaCO_3$	33 mg/l	5 mg/l

Page 2 - Outfall 010

Sample Date	Parameter	Result	Detection Limit Reported
02/10/99	Bis (2-Ethylhexyl)Phthalate	14 ug/l	10 ug/l
03/03/99	Dissolved Barium	59 ug/l	2 ug/l
03/03/99	Dissolved Cadmium	1 ug/l	0.1 ug/l
03/03/99	Dissolved Chromium	1 ug/l	1 ug/l
03/03/99	Dissolved Copper	16 ug/l	1 ug/l
03/03/99	Dissolved Iron	5290 ug/l	3 ug/l
03/03/99	Dissolved Lead	2 ug/l	1 ug/l
03/03/99	Dissolved Manganese	75 ug/l	10 ug/l
03/03/99	Dissolved Nickel	41 ug/l	1 ug/l
03/03/99	Dissolved Silver	0.02 ug/l	0.02 ug/l
03/03/99	Dissolved Zinc	9 ug/l	5 ug/l
02/10/99	Sulfate	28 mg/l	1 mg/l
03/03/99	Total Hardness as $CaCO_3$	54mg/l	5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/28/99	Dissolved Barium	41 ug/l	2 ug/l
07/28/99	Dissolved Cadmium	0.3 ug/l	0.1 ug/l
07/28/99	Dissolved Copper	5 ug/l	1 ug/l
07/28/99	Dissolved Iron	830 ug/l	30 ug/l
07/28/99	Dissolved Manganese	106 ug/l	10 ug/l
07/28/99	Total Hardness as $CaCO_3$	53 mg/l	5 mg/l

Average Hardness Results for Outfall 10:

81.8
50.8
33
54
53
54.5 mg/l

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22193** **(703)583-3800**

SUBJECT: TOXICS MANAGEMENT PROGRAM (TMP) DATA REVIEW
Quantico Marine Corps Base (VA0002151)
REVIEWER: Douglas Frasier
DATE: 4 October 2010

PREVIOUS REVIEW: 1 July 2009

DATA REVIEWED:

This review covers the fourth (4^{th}) annual WET chronic tests conducted in September 2009 for Outfall 010.

DISCUSSION:

The results of these toxicity tests along with the results from previous toxicity tests conducted since 2001 are summarized in Table 1.

The chronic toxicity of the effluent samples was determined with the 3-brood static daily renewal survival and reproduction chronic test using *C. dubia* as the test species and the 7-day static daily renewal survival and growth chronic test using *P. promelas.*

The chronic toxicity tests yielded a LC_{50} of greater than 100% effluent and a No Observed Effect Concentration (NOEC) of 100% effluent for both species; thus, passing the toxicity criterion.

CONCLUSION:

The acute toxicity tests are valid and the test results acceptable. The discharge from this facility is in compliance with the current permit conditions.

BIOMONITORING RESULTS

Quantico Marine Corps Base (VA0002151)

Table 1
Summary of Toxicity Test Results for Outfall 010

TEST DATE	TEST TYPE/ORGANISM	48-HR LC_{50} (%)	NOEC / NOAEC (%)	% SURV	IC_{25} (%)	TU_a	TU_c	REMARK
08/07/01	Acute *C. dubia*	>100		100		<1		1st annual
08/07/01	Acute *P. promelas*	>100		85		<1		
08/02/01	Chronic *C. dubia*		**INVALID**					<60% in control have 3-brood
08/02/01	Chronic *P. promelas*	>100	100 SG	65	>100		1	
09/22/01	Chronic *C. dubia*	>100	100 S 20 R	100	75.6		5	Retest
11/07/02	Acute *C. dubia*	>100		100		<1		2nd annual
11/07/02	Acute *P. promelas*	>100		100		<1		
09/19/02	Chronic *C. dubia*	>100	100 SR	80	0.17		1	MSD 44%
09/19/02	Chronic *P. promelas*		**INVALID**					Control group Growth < 0.25mg
03/20/03	Chronic *P. promelas*	>100	100 SG	92.5	3.4		1	Retest
08/26/03	Acute *C. dubia*	>100		100		<1		3rd annual
08/26/03	Acute *P. promelas*	>100		100		<1		
08/21/03	Chronic *C. dubia*	>100	100 S 4 R	70	15.5		25	
08/21/03	Chronic *P. promelas*	>100	100 SG	75	>100		1	
07/13/04	Acute *C. dubia*	>100		70		<1		4th annual
07/13/04	Acute *P. promelas*	>100		100		<1		
07/08/04	Chronic *C. dubia*	>100	100 S 20 R	90	39.7		5	
07/08/04	Chronic *P. promelas*	>100	**<1 SG**	**10**	1.2		**>100**	
09/14/04	Acute *C. dubia*	87		45		1.15		Retest
09/14/04	Acute *P. promelas*	>100		100		<1		
09/09/04	Chronic *C. dubia*	33	**4 S** **<1 R**	**0**	5.86		**>100**	MSD 9%; See review
09/09/04	Chronic *P. promelas*	>100	100 SG	87.5	>100		1	
11/04/04	Acute *C. dubia*	>100		100		<1		
11/04/04	Acute *P. promelas*	>100		100		<1		
11/02/04	Chronic *C. dubia*	>100	20 S **1 R**	50	10.9		**100**	MSD 6%;
11/02/04	Chronic *P. promelas*	>100	**<1 SG**	40	0.68		**>100**	
12/07/04	Acute *C. dubia*	>100		100		<1		1st Confirm. test
12/07/04	Acute *P. promelas*	>100		100		<1		
12/03/04	Chronic *C. dubia*	>100	100 SR	100	>100		1	
12/03/04	Chronic *P. promelas*	>100	100 SG	90	>100		1	

TEST DATE	TEST TYPE/ORGANISM	48-HR LC_{50} (%)	NOEC / NOAEC (%)	% SURV	IC_{25} (%)	TU_a	TU_c	REMARK
03/01/05	Acute *C. dubia*	>100		95		<1		2nd Confirm. test
03/01/05	Acute *P. promelas*	>100		100		<1		
02/24/05	Chronic *C. dubia*	>100	100 S 20 R	100	>100		5	
02/24/05	Chronic *P. promelas*	>100	100 SG	98	>100		1	
03/29/05	Acute *C. dubia*	>100		100		<1		3rd Confirm. test
03/29/05	Acute *P. promelas*	>100		100		<1		
03/24/05	Chronic *C. dubia*	>100	100 S 20 R	90	>100		5	
03/24/05	Chronic *P. promelas*	>100	100 SG	90	>100		1	
Permit Reissued 23 May 2006								
07/18/06	Chronic *C. dubia*	>100	100 SR	100	>100		1	1st Annual
07/18/06	Chronic *P. promelas*	>100	100 SG	95	>100		1	
10/16/07	Chronic *C. dubia*	>100	100 SR	100	>100		1	2nd Annual
10/16/07	Chronic *P. promelas*	>100	100 S **1 G**	70	1.6		1	
12/09/08	Chronic *C. dubia*	>100	100 SR	100	>100		1	3rd Annual
12/09/08	Chronic *P. promelas*	>100	100 S **20 G**	90	>100		5	
09/29/10	Chronic *C. dubia*	>100	100 SR	100	>100		1	4th Annual
09/29/10	Chronic *P. promelas*	>100	100 SG	95	>100		1	

FOOTNOTES:

Boldfaced value indicates that the test failed the toxicity criterion.

ABBREVIATIONS:

S – Survival; G – Growth; R – Reproduction

% SURV – Percent survival in 100% effluent

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 08/24/00
File: WETLIM10.xls
(MIX.EXE required also)

Enter data in the cells with blue type:

Entry Date:	01/05/01
Facility Name:	Quantico Industrial
VPDES Number:	VA0002151
Outfall Number:	10

Plant Flow:	0.325	MGD	
Acute 1Q10:	0	MGD	100 %
Chronic 7Q10:	0	MGD	100 %

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed) Go to Page 2
Are data available to calculate ACR? (Y/N) N (NOEC<LC50, do not use greater/less than data) Go to Page 3

IWC_a	10	%	Plant flow/plant flow + 1Q10
IWC_c	2	%	Plant flow/plant flow + 7Q10
Dilution, acute	10		100/IWCa
Dilution, chronic	50		100/IWCc
WLA_a	3		Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	50		Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	30		ACR X's WLA_a - converts acute WLA to chronic units
ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447		Default = 0.41
eB	0.6010373		Default = 0.60
eC	2.4334175		Default = 2.43
eD	2.4334175		Default = 2.43 (1 samp)

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE	**3.000000074**	**TUa**	**LC_{50} =**	**34**	**% Use as**	**2.94**	**TUa**

ACUTE WLAa 3 — Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using WLA.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**
BOTH*	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**
AML	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**

ACUTE WLAa,c 30
CHRONIC WLAc 50
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: 12.3283404 a limit may result using WLA.EXE

% Flow to be used from MIX.EXE

Difuser /modeling study?

Enter Y/N	Y	
Acute	10	:1
Chronic	50	:1

$LTA_{a,c}$	12.328341	WLAa,c X's eA			
LTA_c	30.051865	WLAc X's eB			
MDL** with $LTA_{a,c}$	30.0000007	TU_c	NOEC =	3.333333	(Protects from acute/chronic toxicity)
MDL** with LTA_c	73.1287342	TU_c	NOEC =	1.367452	(Protects from chronic toxicity)
AML with lowest LTA	30.0000007	TU_c	NOEC =	3.333333	Lowest LTA X's eD

"The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.

Rounded NOEC's		
NOEC =	4	%
NOEC =	2	%
NOEC =	4	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	3.00000007	TU_a	LC50 =	33.333333	%
MDL with LTA_c	7.31287342	TU_a	LC50 =	13.674515	%

Rounded LC50's		
LC50 =	34	%
LC50 =	14	

Attachment 10

Appendix A Monitoring Results for Outfall 016

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
06/24/97	Dissolved Barium	69 ug/l	2 ug/l
06/24/97	Dissolved Cadmium	0.6 ug/l	0.1 ug/l
06/24/97	Dissolved Copper	6 ug/l	1 ug/l
06/24/97	Dissolved Iron	190 ug/l	30 ug/l
06/24/97	Dissolved manganese	114 ug/l	10 ug/l
06/24/97	Dissolved Nickel	12 ug/l	1 ug/l
06/24/97	Dissolved Thallium	2 ug/l	1 ug/l
06/24/97	Total Hardness as $CaCO_3$	21.2 mg/l	5 mg/l
06/24/97	Sulfate	11 mg/l	1 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
01/14/98	Dissolved Barium	64 ug/l	2 ug/l
01/14/98	Dissolved Cadmium	0.2 ug/l	0.1 ug/l
01/14/98	Dissolved Iron	320 ug/l	30 ug/l
01/14/98	Dissolved Manganese	108 ug/l	10 ug/l
01/14/98	Dissolved Nickel	14 ug/l	1 ug/l
01/14/98	Dissolved Zinc	10 ug/l	5 ug/l
01/14/98	Total Hardness as $CaCO_3$	29.4 mg/l	5 mg/l
01/14/98	Sulfate	21 mg/l	1 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/15/98	Dissolved Barium	67 ug/l	2 ug/l
07/15/98	Dissolved Cadmium	10 ug/l	0.1 ug/l
07/15/98	Dissolved Copper	3 ug/l	1 ug/l
07/15/98	Dissolved Iron	90 ug/l	30 ug/l
07/15/98	Dissolved Lead	2 ug/l	1 ug/l
07/15/98	Dissolved Manganese	112 ug/l	10 ug/l
07/15/98	Dissolved Mercury	0.2 ug/l	0.2 ug/l
07/15/98	Dissolved Nickel	13 ug/l	1 ug/l
07/15/98	Dissolved Zinc	22 ug/l	5 ug/l
07/15/98	Total Hardness as $CaCO_3$	33 mg/l	5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
02/10/99	Bis (2-Ethylhexyl)Phthalate	32 ug/l	10 ug/l
02/17/98	Dissolved Barium	75 ug/l	2 ug/l
02/17/99	Dissolved Cadmium	0.7 ug/l	0.1 ug/l
02/17/99	Dissolved Copper	9 ug/l	1 ug/l
02/17/99	Dissolved Iron	4030 ug/l	30 ug/l
02/17/99	Dissolved Manganese	76 ug/l	10 ug/l
02/17/99	Dissolved Zinc	21 ug/l	5 ug/l
02/10/99	Total Hardness as $CaCO_3$	28.9 mg/l	5 mg/l
02/10/99	Sulfate	15 mg/l	1 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/28/99	Dissolved Barium	60 ug/l	2 ug/l
07/28/99	Dissolved Cadmium	0.3 ug/l	0.1 ug/l
07/28/99	Dissolved Copper	3 ug/l	1 ug/l
07/28/99	Dissolved Iron	1500 ug/l	30 ug/l
07/28/99	Dissolved Manganese	154 ug/l	10 ug/l
07/28/99	Total Hardness as $CaCO_3$	37 mg/l	5 mg/l

Average Hardness Results for Outfall 16:

21.2
29.4
33
28.9
37
29.9 mg/l

M E M O R A N D U M

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22193** **(703) 583-3800**

SUBJECT: TOXICS MANAGEMENT PROGRAM (TMP) DATA REVIEW
Quantico Marine Corps Base (VA0002151) Outfall 016
REVIEWER: Douglas Frasier
DATE: 30 December 2010

PREVIOUS REVIEW: 30 September 2010

DATA REVIEWED:

This review covers the eighteenth (18th) quarterly WET acute tests conducted in October 2010 for Outfall 016.

DISCUSSION:

The results of these toxicity tests along with the results from previous toxicity tests are summarized in Table 1.

The acute toxicity of the effluent sample was determined with the 48-hour static acute toxicity tests using *C. dubia* and *P. promelas* as the test species.

Outfall 016 has a whole effluent toxicity (WET) limit of 2.94 TU_a. The acute tests conducted in October 2010 yielded a LC_{50} of 100% effluent for both test species, equivalent to a 1 TU_a.

CONCLUSION:

The acute toxicity tests are valid and the test results acceptable. The discharge from this facility is in compliance with the current permit conditions.

BIOMONITORING RESULTS

Quantico Marine Corps Base (VA0002151)

Table 1
Summary of Toxicity Test Results for Outfall 016
WET = 2.94 TU_a

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	% SURV	TU_a	REMARK
08/02/01	Acute *C. dubia*	>100	100	<1	1st quarterly
08/02/01	Acute *P. promelas*	>100	100	<1	
10/18/01	Acute *C. dubia*	>100	95	<1	2nd quarterly
10/18/01	Acute *P. promelas*	>100	100	<1	
02/14/02	Acute *C. dubia*	>100	100	<1	3rd quarterly
02/14/02	Acute *P. promelas*	>100	100	<1	
06/14/02	Acute *C. dubia*	>100	100	<1	4th quarterly
06/14/02	Acute *P. promelas*	>100	100	<1	
07/19/02	Acute *C. dubia*	>100	100	<1	5th quarterly
07/19/02	Acute *P. promelas*	>100	100	<1	
11/07/02	Acute *C. dubia*	>100	75	<1	6th quarterly
11/21/02	Acute *P. promelas*	>100	95	<1	
03/12/03	Acute *C. dubia*	>100	95	<1	7th quarterly
03/12/03	Acute *P. promelas*	>100	100	<1	
06/11/03	Acute *C. dubia*	>100	100	<1	8th quarterly
06/11/03	Acute *P. promelas*	>100	100	<1	
09/16/03	Acute *C. dubia*	>100	100	<1	9th quarterly
09/16/03	Acute *P. promelas*	>100	100	<1	
12/17/03	Acute *C. dubia*	80	40	1.25	10th quarterly
12/17/03	Acute *P. promelas*	>100	65	<1	
02/24/04	Acute *C. dubia*	**3.3**	0	**30.5**	11th quarterly
02/24/04	Acute *P. promelas*	76	20	1.3	
04/29/04	Acute *C. dubia*	>100	55	<1	12th quarterly
04/29/04	Acute *P. promelas*	>100	100	<1	
09/14/04	Acute *C. dubia*	>100	100	<1	13th quarterly
09/14/04	Acute *P. promelas*	>100	100	<1	
11/02/04	Acute *C. dubia*	>100	100	<1	14th quarterly
11/02/04	Acute *P. promelas*	>100	100	<1	
02/24/05	Acute *C. dubia*	>100	100	<1	15th quarterly
02/24/05	Acute *P. promelas*	>100	100	<1	
05/25/05	Acute *C. dubia*	>100	95	<1	16th quarterly
05/25/05	Acute *P. promelas*	>100	90	<1	
09/07/05	Acute *C. dubia*	>100	100	<1	17th quarterly
09/07/05	Acute *P. promelas*	>100	100	<1	
12/7/05	Acute *C. dubia*	>100	80	<1	18th quarterly
12/7/05	Acute *P. promelas*	>100	100	<1	
1/4/06	Acute *C. dubia*	>100	100	<1	19th quarterly
1/4/06	Acute *P. promelas*	>100	95	<1	
Permit Reissuance on 23 May 2006					
6/15/06	Acute *C. dubia*	>100	100	<1	1st quarterly
6/15/06	Acute *P. promelas*	>100	100	<1	
10/12/06	Acute *C. dubia*	>100	100	<1	2nd quarterly
10/12/06	Acute *P. promelas*	>100	100	<1	
12/14/06	Acute *C. dubia*	>100	100	<1	3rd quarterly
12/14/06	Acute *P. promelas*	>100	100	<1	

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	% SURV	TU_a	REMARK
03/13/07	Acute *C. dubia*	>100	100	<1	4th quarterly
03/13/07	Acute *P. promelas*	>100	100	<1	
06/12/07	Acute *C. dubia*	>100	100	<1	5th quarterly
06/12/07	Acute *P. promelas*	>100	100	<1	
08/15/07	Acute *C. dubia*	>100	100	<1	6th quarterly
08/15/07	Acute *P. promelas*	>100	100	<1	
12/14/07	Acute *C. dubia*	>100	100	<1	7th quarterly
12/14/07	Acute *P. promelas*	>100	100	<1	
03/13/08	Acute *C. dubia*	>100	100	<1	8th quarterly
03/13/08	Acute *P. promelas*	>100	100	<1	
07/10/08	Acute *C. dubia*	>100	100	<1	9th quarterly
07/10/08	Acute *P. promelas*	>100	100	<1	
10/16/08	Acute *C. dubia*	>100	100	<1	10th quarterly
10/16/08	Acute *P. promelas*	>100	100	<1	
01/14/09	Acute *C. dubia*	>100	100	<1	11th quarterly
01/14/09	Acute *P. promelas*	>100	100	<1	
04/14/09	Acute *C. dubia*	>100	100	<1	12th quarterly
04/14/09	Acute *P. promelas*	>100	100	<1	
07/09/09	Acute *C. dubia*	>100	100	<1	13th quarterly
07/09/09	Acute *P. promelas*	>100	100	<1	
08/14/09	Acute *C. dubia*	>100	100	<1	14th quarterly
08/14/09	Acute *P. promelas*	>100	100	<1	
11/06/09	Acute *C. dubia*	>100	100	<1	15th quarterly
11/06/09	Acute *P. promelas*	>100	100	<1	
02/05/10	Acute *C. dubia*	**18.7**	0	**5.35**	16th quarterly
02/05/10	Acute *P. promelas*	100	50	1	
06/30/10	Acute *C. dubia*	>100	70	<1	17th quarterly
06/30/10	Acute *P. promelas*	>100	95	<1	
10/27/10	Acute *C. dubia*	>100	100	<1	18th quarterly
10/27/10	Acute *P. promelas*	>100	100	<1	

FOOTNOTES:

Boldfaced value indicates that the test failed the toxicity criterion.

ABBREVIATIONS:

S – Survival; G – Growth; R – Reproduction

% SURV – Percent survival in 100% effluent

Spreadsheet for determination of WET test endpoints or WET limits

		Excel 97			**Acute Endpoint/Permit Limit**			**Use as LC_{50} in Special Condition, as TUa on DMR**							
		Revision Date: 08/24/00													
		File: WETLIM10.xls			**ACUTE**	**3.000000074**	**TUa**	**LC_{50} =**	**34**	**% Use as**	**2.94**	**TUa**			
		(MIX.EXE required also)													
					ACUTE WLAa		**3**	Note: Inform the permittee that if the mean of the data exceeds							
								this TUa:	**1.0**	a limit may result using WLA.EXE					
					Chronic Endpoint/Permit Limit			**Use as NOEC in Special Condition, as TUc on DMR**							
					CHRONIC	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**			
					BOTH*	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**			
	Enter data in the cells with blue type:				**AML**	**30.00000074**	**TU_c**	**NOEC =**	**4**	**% Use as**	**25.00**	**TU_c**			
	Entry Date:		01/11/01		**ACUTE WLAa,c**		**30**		Note: Inform the permittee that if the mean						
	Facility Name:		Quantico Industrial		**CHRONIC WLAc**		**50**		of the data exceeds this TUc:			**12.3283404**			
	VPDES Number:		VA0002151		* Both means acute expressed as chronic				a limit may result using WLA.EXE						
	Outfall Number:		16												
					% Flow to be used from MIX.EXE				**Difuser /modeling study?**						
	Plant Flow:		0.765	MGD					Enter Y/N	y					
	Acute 1Q10:		0	MGD	100	%			Acute	10	:1				
	Chronic 7Q10:		0	MGD	100	%			Chronic	50	:1				
	Are data available to calculate CV? (Y/N)				N	(Minimum of 10 data points, same species, needed)						Go to Page 2			
	Are data available to calculate ACR? (Y/N)				N	(NOEC<LC50, do not use greater/less than data)						Go to Page 3			
	IWC_a		10	%	Plant flow/plant flow + 1Q10			**NOTE: If the IWCa is >33%, specify the**							
	IWC_c		2	%	Plant flow/plant flow + 7Q10			**NOAEC = 100% test/endpoint for use**							
	Dilution, acute		10		100/IWCa										
	Dilution, chronic		50		100/IWCc										
	WLA_a		3		Instream criterion (0.3 TUa) X's Dilution, acute										
	WLA_c		50		Instream criterion (1.0 TUc) X's Dilution, chronic										
	$WLA_{a,c}$		30		ACR X's WLA_a - converts acute WLA to chronic units										
	ACR -acute/chronic ratio		10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)										
	CV-Coefficient of variation		0.6		Default of 0.6 - if data are available, use tables Page 2)										
	Constants	eA	0.4109447		Default = 0.41										
		eB	0.6010373		Default = 0.60										
		eC	2.4334175		Default = 2.43										
		eD	2.4334175		Default = 2.43 (1 samp)			****The Maximum Daily Limit is calculated from the lowest**							
								LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.							
	$LTA_{a,c}$		12.328341		WLAa,c X's eA										
	LTA_c		30.051865		WLAc X's eB							Rounded NOEC's		%	
	MDL** with $LTA_{a,c}$		30.0000007	TU_c	NOEC =	3.333333		(Protects from acute/chronic toxicity)				NOEC =	4	%	
	MDL** with LTA_c		73.1287342	TU_c	NOEC =	1.367452		(Protects from chronic toxicity)				NOEC =	2	%	
	AML with lowest LTA		30.0000007	TU_c	NOEC =	3.333333		Lowest LTA X's eD				NOEC =	4		
	IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a														
												Rounded LC50's		%	
	MDL with $LTA_{a,c}$		3.00000007	TU_a	LC50 =	33.333333	%					LC50 =	34	%	
	MDL with LTA_c		7.31287342	TU_a	LC50 =	13.674515	%					LC50 =	14		

Appendix A Monitoring Results for Outfall 035

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
06/17/97	Toluene	<8 ug/l	5 ug/l
06/17/97	Dissolved Barium	316 ug/l	3 ug/l
06/17/97	Dissolved Cadmium	0.3 ug/l	0.1 ug/l
06/17/97	Dissolved Copper	7 ug/l	1 ug/l
06/17/97	Dissolved Lead	4 ug/l	1 ug/l
06/17/97	Dissolved Manganese	85 ug/l	10 ug/l
06/17/97	Dissolved Mercury	0.2 ug/l	0.2 ug/l
06/17/97	Dissolved Nickel	18 ug/l	1 ug/l
06/17/97	Dissolved Zinc	13 ug/l	5 ug/l
06/17/97	Sulfate	21 mg/l	1 mg/l
06/17/97	Total Hardness as $CaCO_3$	94 mg/l	5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
01/13/98	Sulfate	21 mg/l	1 mg/l
01/13/98	Dissolved Barium	229 ug/l	2 ug/l
01/13/98	Dissolved Cadmium	0.3 ug/l	0.1 ug/l
01/13/98	Dissolved Copper	11 ug/l	1 ug/l
01/13/98	Dissolved Lead	4 ug/l	1 ug/l
01/13/98	Dissolved Manganese	45 ug/l	10 ug/l
01/13/98	Dissolved Nickel	33 ug/l	1 ug/l
01/13/98	Dissolved Zinc	32 ug/l	5 ug/l
01/13/98	Total Hardness as $CaCO_3$	67.5 mg/l	5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/15/98	Dissolved Barium	240 ug/l	2 ug/l
07/15/98	Dissolved Cadmium	1 ug/l	0.1 ug/l
07/15/98	Dissolved Chromium	2 ug/l	1 ug/l
07/15/98	Dissolved Iron	30 ug/l	30 ug/l
07/15/98	Dissolved Lead	5 ug/l	1 ug/l
07/15/98	Dissolved Manganese	55 ug/l	10 ug/l
07/15/98	Dissolved Mercury	0.2 ug/l	0.2 ug/l
07/15/98	Dissolved Nickel	45 ug/l	1 ug/l
07/15/98	Dissolved Zinc	76 ug/l	5 ug/l
07/15/98	Total Hardness as $CaCO_3$	72 mg/l	5 mg/l

Page 2 - Outfall 035

Sample Date	Parameter	Result	Detection Limit Reported
02/10/99	Dichloromethane	5 ug/l	5 ug/l
02/10/99	Bis (2-Ethylhexyl)Phthalate	33 ug/l	10 ug/l
02/10/99	Sulfate	25 mg/l	1 mg/l
02/17/99	Dissolved Barium	159 ug/l	2 ug/l
02/17/99	Dissolved Cadmium	4.2 ug/l	0.1 ug/l
02/17/99	Dissolved Chromium	1 ug/l	1 ug/l
02/17/99	Dissolved Copper	17 ug/l	1 ug/l
02/17/99	Dissolved Iron	310 ug/l	30 ug/l
02/17/99	Dissolved Lead	1 ug/l	1 ug/l
02/17/99	Dissolved Manganese	29 ug/l	10 ug/l
02/17/99	Dissolved Zinc	22 ug/l	5 ug/l
02/17/99	Total Hardness as $CaCO_3$	69 mg/l	5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
07/28/99	Dissolved Barium	109 ug/l	1 ug/l
07/28/99	Dissolved Cadmium	0.4 ug/l	0.1 ug/l
07/28/99	Dissolved Chromium	2 ug/l	1 ug/l
07/28/99	Dissolved copper	14 ug/l	1 ug/l
07/28/99	Dissolved Iron	110 ug/l	30 ug/l
07/28/99	Dissolved Lead	2 ug/l	1 ug/l
07/28/99	Dissolved Manganese	55 ug/l	10 ug/l
07/28/99	Dissolved Mercury	0.2 ug/l	0.2 ug/l
07/28/99	Dissolved Zinc	6 ug/l	5 ug/l
07/28/99	Total Hardness as $CaCO_3$	66 mg/l	5 mg/l\

Average Hardness Results for Outfall 35:

94
67.5
72
69
66
73.7 mg/l

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 08/24/00
File: WETLIM10.xls
(MIX.EXE required also)

Enter data in the cells with blue type:

Entry Date:	01/11/01
Facility Name:	Quantico Industrial
VPDES Number:	VA0002151
Outfall Number:	35
Plant Flow:	0.175 MGD
Acute 1Q10:	0 MGD
Chronic 7Q10:	0 MGD

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE 100% = **NOAEC** LC_{50} = **NA** % Use as **NA** **TUa**

ACUTE WLAa **0.6**

Note: Inform the permittee that if the mean of the data exceeds this TUa: **1.0** a limit may result using WLA.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	**6.000000147**	**TU_c**	**NOEC =**	**18**	**% Use as**	**5.55** **TU_c**
BOTH*	**6.000000147**	**TU_c**	**NOEC =**	**18**	**% Use as**	**5.55** **TU_c**
AML	**6.000000147**	**TU_c**	**NOEC =**	**18**	**% Use as**	**5.55** **TU_c**

ACUTE WLAa,c **6**
CHRONIC WLAc **50**
* Both means acute expressed as chronic

Note: Inform the permittee that if the mean of the data exceeds this TUc: **2.46566808** a limit may result using WLA.EXE

% Flow to be used from MIX.EXE

Difuser /modeling study? Enter Y/N: y

Acute: 100 % — Acute: 2 :1
Chronic: 100 % — Chronic: 50 :1

Are data available to calculate CV? (Y/N): N (Minimum of 10 data points, same species, needed) — Go to Page 2
Are data available to calculate ACR? (Y/N): N (NOEC<LC50, do not use greater/less than data) — Go to Page 3

IWC_a	50 %	Plant flow/plant flow + 1Q10
IWC_c	2 %	Plant flow/plant flow + 7Q10
Dilution, acute	2	100/IWCa
Dilution, chronic	50	100/IWCc
WLA_a	0.6	Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	50	Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	6	ACR X's WLA_a - converts acute WLA to chronic units
ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447	Default = 0.41
eB	0.6010373	Default = 0.60
eC	2.4334175	Default = 2.43
eD	2.4334175	Default = 2.43 (1 samp)

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.

$LTA_{a,c}$	2.4656682	WLAa,c X's eA			
LTA_c	30.051865	WLAc X's eB			
MDL** with $LTA_{a,c}$	6.00000015	TU_c	NOEC =	16.666666	(Protects from acute/chronic toxicity)
MDL** with LTA_c	73.1287342	TU_c	NOEC =	1.367452	(Protects from chronic toxicity)
AML with lowest LTA	6.00000015	TU_c	NOEC =	16.666666	Lowest LTA X's eD

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	0.60000001	TU_a	LC50 =	166.666663	%	Use NOAEC=100%
MDL with LTA_c	7.31287342	TU_a	LC50 =	13.674515	%	

Rounded NOEC's %
NOEC = 17 %
NOEC = 2 %
NOEC = 17

Rounded LC50's %
LC50 = NA %
LC50 = 14

Attachment 15

Appendix A Monitoring Results for Outfall 072

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
09/10/97	Total Organic Carbon	0.5 mg/l	4.2 mg/l
01/21/98	Total Organic Carbon	0.5 mg/l	4.5 mg/l

Appendix A Monitoring Results for Outfall 073

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
08/20/97	Dissolved Barium	9 ug/l	2 ug/l
08/20/97	Dissolved Cadmium	0.2 ug/l	0.1 ug/l
08/20/97	Dissolved Silver	0.4 ug/l	0.2 ug/l
08/20/97	Total Magnesium	900 ug/l	200 ug/l
08/20/97	Chemical Oxygen Demand	25 mg/l	3 mg/l
08/20/97	Total Dissolved Solids	72 mg/l	1 mg/l
08/20/97	Total Kjeldahl Nitrogen	1.3 mg/l	0.1 mg/l
08/20/97	Total Organic Carbon	6.9 mg/l	0.5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
01/07/98	Dissolved Barium	21 ug/l	2 ug/l
01/07/98	Dissolved Cadmium	0.5 ug/l	0.1 ug/l
01/07/98	Dissolved Chromium	2 ug/l	1 ug/l
01/07/98	Dissolved Lead	2 ug/l	1 ug/l
01/07/98	Total Magnesium	2100 ug/l	200 ug/l
01/07/98	Chemical Oxygen Demand	72 mg/l	3 mg/l
01/07/98	Total Dissolved Solids	3.1 mg/l	1mg/l
01/07/98	Total Kjeldahl Nitrogen	0.6 mg/l	0.1 mg/l
01/07/98	Total Organic Carbon	5.3 mg/l	0.5 mg/l

Appendix A Monitoring Results for Outfall 074

The following parameters were reported at levels that were at or above the detection level for the analysis method:

Sample Date	Parameter	Result	Detection Limit Reported
08/20/97	Dissolved Barium	52 ug/l	2 ug/l
08/20/97	Dissolved Cadmium	0.4 ug/l	0.1 ug/l
08/20/97	Dissolved Chromium	4 ug/l	1 ug/l
08/20/97	Dissolved Mercury	0.2 ug/l	0.2 ug/l
08/20/97	Total Magnesium	5900 ug/l	200 ug/l
08/20/97	Chemical Oxygen Demand	72 mg/l	3 mg/l
08/20/97	Total Dissolved Solids	230 mg/l	1 mg/l
08/20/97	Total Kjeldahl Nitrogen	4.9 mg/l	0.1 mg/l
08/20/97	Total Organic Carbon	15 mg/l	0.5 mg/l

Sample Date	Parameter	Result	Detection Limit Reported
01/14/98	Dissolved Barium	92 ug/l	2 ug/l
01/14/98	Dissolved Cadmium	0.5 ug/l	0.1 ug/l
01/14/98	Dissolved Chromium	6 ug/l	1 ug/l
01/14/98	Dissolved Lead	6 ug/l	1 ug/l
01/14/98	Total Magnesium	12,5000 ug/l	200 ug/l
01/14/98	Chemical Oxygen Demand	80mg/l	3 mg/l
01/14/98	Total Dissolved Solids	520 mg/l	1 mg/l
01/14/98	Total Kjeldahl Nitrogen	3.7 mg/l	0.1 mg/l
01/14/98	Total Organic Carbon	15 mg/l	0.5 mg/l

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of stormwater and treated industrial process waters into a water body in Stafford County, Fauquier County, and Prince William County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2011 to 5:00 p.m. on XXX, 2011

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Industrial Wastewater and Stormwater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: US Marine Corps – NREA, Quantico Marine Corps Base, 3049 Bordelon St, Quantico, VA 22134 VA0002151

NAME AND ADDRESS OF FACILITY: US Marine Corps – Quantico Marine Corps Base, 3049 Bordelon St, Quantico, VA 22134. This facility is an Extraordinary Environmental Enterprise participant in Virginia's Environmental Excellence Program.

PROJECT DESCRIPTION: US Marine Corps has applied for a reissuance of a permit for the federal US Marine Corps Quantico Marine Corps Base. The applicant proposes to release cooling waters, treated industrial wastewaters and storm water at variable rates (million gallons per day) into numerous water bodies. The facility proposes to release cooling water, treated industrial wastewaters and storm water in Beaverdam Creek, UT; Chopawamsic Creek; Chopawamsic Creek, UT; Potomac River; and Smith Lake, UT in the Potomac watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: Flow, pH, Total Petroleum Hydrocarbons, Total Suspended Solids, Total Residual Chlorine, Temperature, Whole Effluent Toxicity, Chemical Oxygen Demand, Total Organic Carbon, Oil & Grease, Benzene, Ethylbenzene, Toluene, Total Xylenes, and Naphthalene.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	US Marine Corps – Quantico Marine Corps Base
NPDES Permit Number:	VA0002151
Permit Writer Name:	Alison L. Thompson
Date:	March 16, 2011

Major [X] **Minor** [ ] **Industrial** [X] **Municipal** [ ]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities? See Fact Sheet		X	

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	X		
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?	X		

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?	X		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	**Yes**	**No**	**N/A**
1. Is the facility subject to a national effluent limitations guideline (ELG)?		X	
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			X
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?	X		
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			X
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?		X	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	X		
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?	X		
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

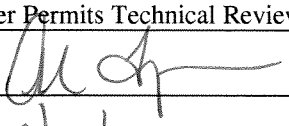
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Alison L. Thompson
Title	Water Permits Technical Reviewer
Signature	
Date	3/16/2011